The Journal of Social, Political and Economic Studies

COUNCIL FOR SOCIAL & ECONOMIC STUDIES
6861 Elm Street, Suite 4H
McLean, Virginia 22101
Tel. (703) 442-8010

Summer 1981

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Contemporary Economics and Business Association at George Mason University and Council for Social and Economic Studies

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The Journal of Social, Political and Economic Studies is a referred journal published quarterly by the Council for Social and Economic Studies in cooperation with the Contemporary Economics and Business Association at George Mason University. The address for correspondence is Suite 520, 1629 K Street, N.W., Washington, D.C. 20006. (Telephone: 202/232-1040). Formerly known as the *Journal of Social and Political Studies*, the subscription rate is $40 per annum for libraries, institutions and other corporate bodies. Reduced three year subscription rates are available at a cost of $110 for libraries and other corporate bodies (twelve issues); and special subscription rates are available to faculty members, students, and certain other qualified individuals. Members of the academic community and other interested readers are invited to consult the General Editor at the foregoing address concerning articles which they may wish to submit for consideration for publication.

ISSN 0193-5941 (Formerly 362-580X)

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THE LAW OF THE SEA TREATY: A REVIEW OF THE ISSUES

By Guy M. Hicks

On March 9, 1981, the Third United Nations Conference on the Law of the Sea reconvened in New York City, anxious to complete seven years of delicate seabed negotiations. Before this tenth session began, however, the Reagan Administration announced its intention to extend negotiations through the upcoming session in order that a full "policy review by the United States Government" could be conducted.

The United States decision to continue negotiations is, in part, a response to criticisms raised by the public and private sector which question the ability of the treaty to defend vital U.S. economic interests in deep seabed mining as well as to protect sensitive technology necessary in accessing mineral nodules from the ocean floor. Additionally, critics have charged that the proposed text appears to contradict fundamental free market principles advocated by the United States, while favoring least-developed and Socialist bloc countries with capital and political advantages over Western signatories.

The current negotiations, therefore, are in a state of diplomatic flux. Participating nations have registered concern over the decision by the United States to extend the seabed talks, but the current session is moving ahead under the direction of T.T.B. Koh of Singapore, elected as president of this session on March 13, 1981.

The purpose of this paper is to briefly review past negotiations and examine the basic controversies involving the current Law of the Sea Convention Text as prepared by the Ninth Session of the Third United Nations Conference on the Law of the Sea held last summer in Geneva, Switzerland.

Background

The earliest U.N.-sponsored Conference on the Law of the Sea was held in 1958 under the direction of the International Law Commission. This conference dealt principally with the question of seabed mineral exploitation, recognizing the freedom of states "to explore and to exploit the seabed and subsoil

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in all areas seaward of territorial waters." (1)

The legal discussion surrounding deep seabed exploitation began in earnest with a 1967 proposal by the Maltese ambassador to the U.N., requesting that the issue of deep seabed regulation be included on the agenda of the General Assembly.

The *Note Verable* submitted by the ambassador warned that uncontrolled exploitation of the seabed would lead to eventual militarization of the ocean floor and allow the more technologically advanced nations greater access to the seabed at the expense of their less-developed counterparts. Malta further proposed that the ocean's floor and its wealth was the "common heritage" of all mankind and, therefore, should be protected by international treaty from division among the states.

The primary desire of the United States at this time was to stave off the mounting wave of "creeping jurisdiction" — the expanding claims of coastal states to increasingly larger territorial jurisdictions seaward. Continued expansion threatened the closure of over one hundred vital straits to free passage, thereby disrupting customary law regarding freedom of the seas.

Resolution 2467, passed on December 21, 1968, officially established the Standing Committee on Peaceful Uses of the Seabed and the Ocean Floor Beyond the Limits of National Jurisdiction. This Committee was charged with insuring that exploitation of the ocean's floor "should be carried out for the benefit of mankind as a whole . . . taking into account the special interests of the developing countries . . . . " (2)

The Committee was further instructed to investigate and study the means whereby the ocean's wealth could be successfully accessed and developed. This mandate has largely been abandoned as the ongoing economic and political debate between the developed nations of the "North" and the less-developed nations of the "South" has superseded the desire for an open development of the ocean floor.

On December 17, 1970, the General Assembly of the United Nations voted 106 to 7, with 6 abstentions, to convene an official Law of the Sea Conference charged with:

> . . . a broad range of related issues including those concerning the regimes of the high seas, the continental shelf, the territorial seas . . ., international straits, fishing and conservation of the marine environment, the prevention of

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pollution and the [promotion] of scientific research . . .(3)

Over the next eleven years, the conference became clearly polarized between the bloc of developing nations — the Group of 77 — and the industrially developed nations of the West. This diplomatic struggle centered around the previously introduced notion of mankind's "common heritage" to the resources of the ocean's floor. The South maintained that the more technologically advanced nations of the North would "disinherit" the less-developed nations through exclusive exploitation of the seabed. Consequently the "disadvantaged" countries favored the establishment of a deep seabed authority empowered to oversee and regulate every aspect of seabed development, insuring that profits be transferred to the developing nations. (4)

The United States and other developed countries have constantly reaffirmed the notion of "common heritage," but have insisted that access to the seabed be assured for both public and private mining interests, arguing that the free market system must be allowed to operate on the ocean's floor unfettered by artificial quotas and production constraints.

Throughout three separate conferences, issues of discussion have been couched in terms of the greater North-South debate. Though both sides have sought compromises throughout, the Reagan Administration's decision to forestall further negotiations reflects the concern expressed by many that the current agreement makes too many concessions to the Third World at the expense of developed nations.

Guaranteed Access

The United States is critically deficient in domestic supplies of manganese, nickel and cobalt — materials vital in the production of steel, and consequently important to the nation's economy and security. Traditional land-based sources of these precious minerals are politically unstable and subject to increased international demand, causing shortages and ever-increasing prices. Indeed, current producers may exhaust all known land-based supplies of these minerals within the next fifty years.

The deep seabed regime currently under consideration does not guarantee access by the U.S. or any individual nation to these vital mineral resources and may ultimately deny their

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availability. The International Sea-Bed Authority would have sole responsibility in administering mining rights, a decision-making process which is likely to be highly politicized. (5) Consequently, a state's ability to secure mining plots is in direct relation to its position of influence in the Assembly and among its members. (6) The current one vote-one nation clause in the Assembly effectively eliminates any veto from the developed nations, thereby casting "serious doubt on assured access by developed states." (7)

Secondly, the principal appendage of the Authority, the Enterprise, would operate in direct competition with private and state companies in a parallel system, further inhibiting free access to seabed minerals:

> The Enterprise shall be the organ of the Authority which shall carry out activities in the Area directly, pursuant to article 153, paragraph 2 (a), as well as transportation, processing and marketing of minerals recovered from the Area (art. 170, para. 1).

This dual structure would appear to encourage competition between the Enterprise and the private mining sector, but in reality it acts to ensure the Enterprise's competitive superiority. The Enterprise would operate under Convention authority, making it the beneficiary of mandatory transfers of technology and funds from the states and the inevitable recipient of political and economic favoritism *vis-a-vis* its institutional relationship with the Sea-Bed Authority (art. 144, art. 171, para.(a)).

Additionally, the countries of the Third World have introduced and supported placing a production ceiling on the amount of seabed minerals which may be extracted from the ocean's floor (art. 151, para. 2(b)). This plank of the Convention text is aimed at protecting land-based mineral producers, but it also ensures continued U.S. dependence on foreign supplies of strategic minerals by blocking open access to the seabed. Finally, the text prevents any exploitation of non-manganese nodules until a comprehensive regime can be agreed upon in the distant future (art. 151, para. 3 and 4). In effect, the Group of 77 wishes to deny developed nations access to any additional mineral resources until an agreement satisfactory to the Third World can be constructed.

It is questionable, therefore, whether the current Convention text protects the developed nations' right of access to the minerals of the seabed, now or in the future.

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Mandatory Technological Transfers

At the fifth session of the Conference, held in New York during 1976, Secretary of State Henry Kissinger agreed to the transfer of technology to the Sea-Bed Authority on three conditions:

1. That the United States be guaranteed access to the seabed and the mineral nodules thereon.
2. "Suitable representation" in the Authority and its various decision-making bodies be assured.
3. Production controls on deep sea mining be eliminated from the convention text. (8)

Kissinger warned at that time that the United States:

> is many years ahead of any other [country] in the technology of deep seabed mining, and we are in all respects prepared to protect our interests. If the seabeds are not subject to international agreement the United States can and will proceed to explore and mine on its own. (9)

Though Kissinger's conditions were largely ignored, the notion of technological transfer was seized upon by the South and made a precondition to any development of the seabed. Representatives of the Third World maintain that mandatory transfers of technology are necessary if the poorer countries are to share in the resources of the sea. More importantly, inexpensive technological transfers are a vital component of the LOS agreement itself and underpin the developing world's plan for a "New International Economic Order." (10)

The North maintains that seabed technologies would be made available to Third World nations through the international market-place. Even so, the U.S. delegation has conceded mandatory transfers to the Enterprise with the stipulation that seabed technologies not be made directly available to the developing nations (art. 144, para. 2(b)). However, Third World and Eastern Socialist-bloc countries, through their participation in and control of the Authority will have indirect access to all transferred technologies, far below the market price. It is unclear, therefore, how these transfers can be made "on fair and reasonable terms" as stipulated by the United States under the current agreement and still protect producer rights of proprietorship (art. 144, para. 2(b)). Additionally, the nature of mandatory transfers would have a profoundly negative impact on technological development in the seabed field, thereby undermining a

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major U.S. interest in the development and protection of such high level technologies.

Finally, any mandatory transfer of technology in the regime would have a long-range and pervasive impact on future dealings with Third World countries in other, non-seabed related areas. The Group of 77 considers technology to fall within the common heritage of mankind and hence all nations "have the right of access to technology in order to improve the standard of living of their people . . . ." (11)

Any agreement by the United States to such an open-ended technological transfer sets the stage for a gradual erosion of the right to protect and competitively market highly valuable technologies in the future. Such a precedent could prove costly to the U.S. due to the nation's economic reliance on technological development and foreign sales, and could undermine the negotiating position of the United States in similar conferences in the future.

Production Ceilings

It is in the interest of land-based producers to seek limits on the amounts of minerals which may be extracted from the ocean's floor. Less-developed, primary producers fear that uncontrolled seabed mining would have a significant impact on their economies as markets for mineral commodities became more competitive, and sales to previously larger consumer-states fall off.

Mandatory production ceilings run contrary to stated U.S. objectives for several reasons: first, availability of vital minerals would be artificially limited, leaving the notion of guaranteed access seriously flawed. Second, with a reduced number of mine sites available, selection would be left to the Authority; the selection would then be highly politicized and weighted in favor of Third World nations (arts. 148, 159, 160, 161, 162). Third, the maintenance of international production ceilings in this area could set a precedent on raw material production quotas contrary to U.S. interests. As the largest consumer of raw materials in the world, the United States could face artificial shortages of other important resources as producers attempt to manipulate the market to their advantage.

By severely restricting the amount of minerals which may be removed from the seabed, the United States will not be able to

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make significant advances toward global resource independence. Rather, the U.S. will institutionalize its continued dependence on Third World and potentially unstable producers of strategic minerals.

With the number of mine sites limited by the production ceiling, applicants will inevitably be screened and selected by the Authority based on criteria slanted in favor of the Third World. The "effective participation of developing states" is to be ensured by the Authority and the selection of mining sites and contractors would reflect that directive, thereby running contrary to the U.S.-held policy of unrestricted access to the seabed (art. 148).

Thirdly, the instituting of international production ceilings in the seabed regime sets a potentially dangerous precedence which may have spillover effects in other, non-seabed areas. There is little to support the notion that the seabed regime will be viewed as a unique international agreement by the Third World. To the contrary, developing nations view the seabed regime as a legitimate precedence on which to base demands for similar multinational agreements in other areas. (12)

Governing the Seabed Regime

One of the most questionable aspects of the proposed convention is the Treaty's system of governance. The basic ideological/economic battle between the North and South which permeates the negotiations becomes most apparent in this portion of the accord.

The developing nations of the world view a realignment of political power as absolutely essential in bringing about the "New International Economic Order." Much of the current leadership of the Third World maintains that representation based on economic or technological contributions should be rejected and that a "true democracy" among nations should take its place.

The North is willing to provide poorer nations with economic assistance through bilateral aid, but remain opposed to any compulsory measures as imposed by an international regime. In particular, developed nations do not favor a binding agreement at the international level which would reduce their sovereign political power *vis-a-vis* the South or remove the opportunity to "veto" unfavorable policies contrary to their national interests.

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The Law of the Sea conference text proposes establishment of a bicameral system within the Authority: an Assembly made up of all participating states and an Executive Council chosen among the Assembly and representing the various political/economic/geographic groups found within the Assembly (art. 158, para. 1).

As outlined in article 159, the Assembly will operate on a one member-one vote basis with decisions made by a two-thirds majority of the members present and voting (art. 159, paras. 5 and 6).

> The Assembly, as the sole organ of the Authority consisting of all the members, shall be considered the supreme organ of the Authority to which the other principal organs shall be accountable (art. 160, para. 1).

The Assembly is empowered to elect the members of the Council, set policy for the Authority and its operating appendage, the Enterprise, as well as determine the "Assessment of the contributions of members . . . to the Authority . . . based upon the scale used for the regular budget of the United Nations" (art. 160, para. 1(a), (e)).

The United States and its allies will face a body dominated by countries of the Third World without the opportunity to exercise any veto power (as is the case currently in the United Nations), while at the same time providing a majority of the technology and a large share of the capital necessary to operate the Authority and the Enterprise.

Representation on the Council, which acts as the executive chamber of the Authority, is clearly designed to benefit Third World and Socialist-bloc countries at the expense of the developed world. The United States is not guaranteed a permanent seat on the Council, but must compete with the other developed nations for representation, seriously jeopardizing Western attempts at collective action on the Council.

The Council membership is elected out of the Assembly body and divided into four categories of representation totaling 36 members:

1. Four members from among the eight states which invested the largest amounts of capital, "including at least one nation from the Eastern (Socialist) European region."
2. Four members from among the largest consumers of land-based raw materials to be derived from seabed mining,

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"and in any case one state from the Eastern (Socialist) European region."

3. Four members from among the major exporters of the affected minerals, including two developing nations whose economy is heavily dependent on the affected minerals.

4. "Six members from among the developing States."

5. Eighteen members selected geographically to include: "Africa, Asia, Eastern Europe (Socialist), Latin America, Western Europe, and others" (art. 161, para. 1).

Clearly, the United States and other developed nations are disproportionately underrepresented *vis-a-vis* the developing and Socialist-bloc nations. This distorted formula of representation is codified by the Treaty and will continue unchanged into the future. By failing to secure permanent representation on the Council, the United States has agreed to provide capital and technology to an organization in which it will be unable, now or in the future, to exert proportional influence.

Equally disturbing is the automatic review to be conducted "fifteen years from 1 January of the year in which the earliest commercial production commences . . ." (art. 155, para. 1, 2.). The purpose of this review conference is to ascertain whether the policies initiated in the previous fifteen years have successfully achieved the goals of the convention as interpreted by the Assembly. If not, the Assembly is empowered to revise the system of seabed management, binding upon all parties by a two-thirds majority vote of the Members (art. 155, para. 4). Not only is this potentially disastrous for the United States and its allies, but it sets an international precedence by eliminating the right of preemptive veto and encroaches on the doctrine of national sovereignty.

This proposed system of governance fails to provide the developed nations with adequate representation in either of the two governing bodies and endangers future U.S. access to vital seabed minerals.

Economic Redistribution through the Authority

President Boumedienne of Algeria officially voiced the Third World's call for a "New International Economic Order" at the Sixth Special Assembly of the United Nations in 1974. The intent of this "new order" is to facilitate a global redistribution of wealth from the developed nations of the North to the less-

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developed nations of the South through the restructuring of present international political, commercial and economic organizations, giving the poorer nations preferential treatment as well as access to advanced technologies and commodities protection.

The proposed Law of the Sea text is viewed by nations of the Third World as the primary vehicle through which this redistribution of wealth may be initiated. In 1974, at the U.N. Conference on the Law of the Sea, Colombia maintained:

> The International Authority should be a democratic body responsible for bridging the gap between the rich countries and the poor countries and establishing a fairer and more just system of international relations (Annex III, art. 13, para. 2).

As outlined in Annex III, Article 12, the Draft text requires private companies to provide the Enterprise with a large amount of entry capital, filing fees, and a substantial annual "financial contribution" for every year the particular company operates on the seabed.

> A fee shall be levied for the administrative cost of processing an application for a contract of exploration and exploitation and shall be fixed at an amount of $50,000 per application . . . .
>
> A contractor shall pay an annual fixed fee of $1 million from the date of entry into force of the contract . . . (Annex III, art. 13, para. 3).

In addition, the Authority is empowered to tax the profits of these private mining concerns up to seventy percent of net profits during the second year of operation; these funds would be earmarked to finance Enterprise operations conducted in tandem with developing countries (Annex III, art. 13. para. 4). The Group of 77 maintains that these transfers are the means through which the notion of common heritage of the seabed may be protected by allowing all states "fair and equal" access to the ocean floor, thus avoiding any technical or economic advantage by the developed nations. In reality, these transfers represent a major step forward in the Third World's quest for an arbitrary redistribution of global wealth.

The system of taxation as outlined by the text could have serious repercussions for the United States and other developed nations in several areas. First, the excessive use of corporate

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taxes by the Authority may discourage private development of the seabed floor, jeopardizing their access to the strategic minerals found in the ocean and perpetuating the nation's dependence on unstable foreign sources.

Secondly, the international precedence set by the Treaty's tax provisions is extremely dangerous. Allowing the Seabed Authority to tax U.S. and other free world companies operating on the seabed will have a spillover effect in non-seabed development areas where the Third World has a growing interest, such as the Antarctic and outer space.

Third, by codifying the right of an international organization to tax private companies, the Western concept of the free market is seriously jeopardized and may lead to similar taxation procedures in other U.N. bodies like UNESCO and WHO, two organizations dominated by the Third World which have considered similar taxation schemes.

Achieving L.O.S. Gains

The current Law of the Sea proposal contains several positive aspects with regard to protection of navigation rights through international straits, setting territorial limits at twelve miles and establishing economic zones to 200 miles. Additionally, the Treaty provides for a cooperative international fisheries regime aimed at safeguarding and conserving migratory and endangered species as well as providing protection for marine mammals and other components of the fragile marine environment. (13)

The above benefits can be equally obtained through bilateral relationships with the affected nations or by negotiating specific agreements through the U.N. General Assembly or existing organizations such as the U.N. Environmental Programme, the International Civil Aviation Organization to name a few. To base approval of the Treaty on fears of losing a few benefits while accepting a number of potentially harmful provisions would be ill-advised and possibly worse than no treaty at all.

Conclusion

The proposed Law of the Sea Convention is an ambitious attempt to administer, regulate and adjudicate two-thirds of the earth's surface, with correspondingly profound impact on the nations' commercial, environmental, and defense communities. As such, it deserves a careful review by the governments of the

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nations of the free world.

The present Treaty text contains a number of benefits, but does not justify the disadvantages accrued through its implementation. Moreover, the political and economic implications of the agreement will have a long-term, negative effect on the relations between the developed nations and the countries of the Third World. An international agreement on seabed mining is necessary and long overdue. But the risk of losing this particular treaty does not outweigh the future implications of an agreement unfairly constructed in favor of one portion of the international community at the expense of another.

Any precedence set in the Law of the Sea negotiations may have sweeping impact on other, non-seabed related negotiations in the future. It would be naive to assume that a concessionary approach to the Third World would be viewed as unique to the Law of the Sea. Rather, it may set the tone of international negotiations for years to come.

FOOTNOTES

(1) Theodore G. Kronmiller, *The Lawfulness of Deep Seabed Mining*, The National Oceanic and Atmospheric Administration, Department of Commerce, Washington, D.C., 1979, p. 19.

(2) U.N. Resolution 2467 as quoted in Kronmiller, p. 25.

(3) U.N. Resolution 2750 as quoted in Kronmiller, p. 42.

(4) See *Third United Nations Conference on the Law of the Sea, Official Records, (1974)* Art. 20, in Kronmiller, p. 54.

(5) The International Sea-Bed Authority is the organization through which deep seabed mining would be administered and regulated. See the Draft Convention on The Law of the Sea-Informal Text, 2 September, 1980, Section 5, articles 156-158 (hereafter referred to as the DCLOS).

(6) The Assembly would be the supreme legislative organ of the Authority to which all signatories belong. See DCLOS, articles 159 and 160.

(7) John Breaux, "The Diminishing Prospects for an Acceptable Law of the Sea Treaty," *Virginia Journal of International Law*, Winter 1979, Vol. 2, p. 259.

(8) "Law of the Sea: A Test of International Cooperation," Address by the Honorable Henry A. Kissinger, Secretary of State, Before the Foreign Policy Association, U.S. Council of the International Chamber of Commerce, and U.N. Association of the U.S.A., New York City, April 8, 1976 (State Department Press Release No. 162, April 8, 1976) as quoted in Kronmiller, p. 72.

(9) *Ibid.*, p. 73.

(10) See Susan P. Woodward, "The Third World: New Realities and Old Myths," *Backgrounder* No. 114, The Heritage Foundation, March 18, 1980, p. 5.

(11) See United Nations Conference on Trade and Development, Report of the Intergovernmental Group of Experts on an International Code of Conduct on Transfer of Technology on its Fifth Session, Annex I, U.N. Document TD/AC. 1/15 (1978), Preamble, art. 2 (hereinafter cited as Code), as quoted in Breaux, p. 263.

(12) Richard G. Darman, "Precedential Implications of a Deep Seabed Mining Regime," Testimony before the Subcommittee on Oceanography of the U.S. House of Representatives, Committee on Merchant Marine and Fisheries, August 17, 1978, p. 5.

(13) See DCLOS text, Parts II-VII and XIII-XIV.

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EL SALVADOR'S MARXIST REVOLUTION

By Alexander Kruger

Introduction

Within the last few months, the events in El Salvador have come to the forefront of American foreign policy. Since the bloodless coup in October 1979, which ousted General Romero and many of the leaders of the armed forces, El Salvador has undergone an escalation of violence resulting in approximately 10,000 deaths during 1980. This already steep death toll increased further in January 1981 with the "final phase of the general offensive," a military attempt by the leftist forces to gain control of El Salvador prior to the U.S. presidential inauguration. The failure of the January "general offensive" has brought about a campaign to muster international support to pressure the Salvadorean government to reach a negotiated political solution with the leftist forces. This study examines the evolution, composition, political orientation, and objectives of the revolutionary left in El Salvador, composed of the DRU (Unified Revolutionary Directorate), a coalition of "Marxist-Leninist" guerrilla groups, and the FDR (Democratic Revolutionary Front), the international arm of the DRU.

Origin of the Communist Party

The communist movement in El Salvador originated in 1921 with the formation of communist cells and Marxist labor movements by a mix of university students and peasants inspired by the Soviet Revolution. They established a formal, overt party in 1925. The most prominent leader of this movement, Augustin Farabundo Marti, was captured by the Salvadorean government in 1932 and sentenced to death. This followed the communist inspired uprising that year which claimed up to 30,000 Salvadorean lives, including not only students and peasants, but also soldiers and others within the Salvadorean society. Since 1932, the PCS (Communist Party of El Salvador) operated primarily in a clandestine fashion, infiltrating political parties and student groups. They also formed front organizations, which concealed their Marxist orientation, and used them to foment unrest.

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Following the 1959 Cuban Revolution which brought Fidel Castro to power, the communist parties throughout Latin America reassessed their strategy, and most of them concluded that power could be best attained through a prolonged armed struggle. This brought about a dispute within the PCS over whether the party should attempt to gain power through elections or through an armed revolutionary confrontation. This quarrel over tactics resulted in the formation of two factions within the PCS. The first faction, comprised of intellectuals headed by Shafik Handal, proposed to work through the electoral process. The second group, headed by Cayetano Carpio, included most of the younger members within the PCS, and favored a prolonged armed struggle to destabilize and overthrow the Salvadorean government. For the radicals within the Carpio faction, Cuba became a nearby center of indoctrination and military training.

The Emergence of the FPL

In spite of the Cuban support for terrorist movements, it was not until 1970 that the FPL (Popular Forces of Liberation Farabundo Marti) was formed, through a breakup of the two PCS factions. Through this split, Cayetano Carpio became Secretary General of the FPL, while Shafik Handal assumed full control of the remains of the PCS. The FPL, the largest and most influential of the Salvadorean guerrilla organizations, has conducted numerous terrorist operations, including assassinations, robberies, kidnappings, assaults and extortions. This guerrilla organization was largely responsible for the deterioration in the relationship between El Salvador's business community and the military government, primarily due to the government's failure to solve any of the many criminal acts committed against the private sector entrepreneurs. This mutual distrust increased due to FPL operations in which the guerrillas wore Salvadorean military uniforms, creating suspicion among the business community that the FPL was integrated with members of the Salvadorean security forces. This suspicion was further reinforced by the May 1977 kidnapping of Mauricio Borgonovo, a prominent Salvadorean businessman, who was abducted by persons referring to each other by military rank. The FPL later claimed credit for this abduction.

In 1975, the FPL set up a front organization to carry out its

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propaganda activities. This front organization, the BPR (Popular Revolutionary Bloc), was formed through a coalition of FPL supporters, primarily groups organized by Father Bernard Bourlang, a French Jesuit. Juan Chacon, Facundo Guardado, and Julio Flores, three of the four members of the Central Command within the FPL National Masses Committee, became the leaders of the BPR, while the fourth member, Oscar Bonilla, became Secretary General of AGEUS (Association of University Students of El Salvador). Both the BPR and AGEUS were housed in the same office in the National University of El Salvador. The BPR has conducted many strikes, marches, and occupations of embassies and churches. The strong anti-U.S. sentiment and Marxist-Leninist ideology of both the FPL and the BPR are revealed through their publications, including the *Red Star, Popular Combat, Guerilla,* and *The Rebel.*

The Emergence of the ERP

During the early 1970s, a second guerrilla group was created by "dissatisfied members of the PCS." (1) This group, the ERP (the People's Revolutionary Army), currently under the leadership of Joaquin Villalobos, followed the Maoist line and developed ties with several guerrilla organizations in Latin America, including the Tupamaro National Liberation Movement of Uruguay, the People's Revolutionary Army of Argentina, and the Leftist Revolutionary Movement of Chile (MIR). The ERP has carried out terrorist operations similar to those committed by the FPL, including an October 1979 kidnapping of a prominent Salvadorean industrialist, Jaime Hill, by ERP guerrillas dressed in army and police uniforms.

The ERP formed its front organization, the LP-28 (Popular Leagues of February 28), in 1977 to carry out the organization's propaganda activities and for recruiting purposes. The LP-28 and the ERP promote their Marxist philosophy through their publications, *Proletariat Thought, Communist Press, Red Flag, Wake Up Peasant,* and *The Power is Born from the Gun.* The ERP and LP-28 undertook an important role in subverting the human rights movement in El Salvador by promoting an ERP member, Norma Guevara, into a position of leadership within the Salvadorean Commission of Human Rights (CDHES).

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The Emergence of the Farn

The last major guerrilla organization was formed through the ERP's assassination of one of its members, Roque Dalton. This created a split within the ERP in 1975, resulting in the formation of the FARN (Armed Forces of National Resistance). The FARN has conducted numerous kidnappings of foreign businessmen and charged exorbitant ransoms ("payment of the war tax"), becoming the wealthiest of the Salvadorean guerrilla groups. FARN's former leader, Ernesto Jovel, who was recently killed in action, has been replaced by Ferman Cienfuegos.

To carry out its propaganda activities, the FARN took over the FAPU (Unified Popular Action Front), which had been formed in 1974 by the ERP and two Catholic priests, Higinio and Jose Inocencio Alas. The FAPU, whose theme is "armed struggle today, socialism tomorrow," has conducted numerous strikes, marches, and propaganda distribution projects. This group has been involved in El Salvador's labor movements and has worked particularly closely with STISS (Union of Workers of the Salvadorean Institute of Social Security). The Marxist ideology of FAPU and FARN has been extensively publicized in their publications, *Pueblo* and *For the Proletariat Cause*, which have also conducted a vitriolic campaign against the Salvadorean security forces, the Salvadorean business community, and particularly the United States.

The Communist Party of El Salvador

The Moscow-oriented PCS remained active in El Salvador's political system through its "recognized legal front," the UDN (National Democratic Union). (2) It was through the UDN, formed in 1970, that the PCS took part in the 1972 and 1977 Salvadorean presidential elections through the coalition of opposition parties known as UNO (National Opposition Union). The UDN is comprised of several Marxist labor and peasant groups, including CUTS (Salvadorean Workers Confederation), a Marxist labor conglomerate.

Under El Salvador's labor laws, ten unions are required to form one federation, and three federations form one confederation. The PCS, which has been involved in El Salvador's labor movement for some years, formed its third controlled federation, FUSS (United Trade Union Federation of El Salvador),

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in December 1978. With FUSS and two other federations, FESTIAVTSCES (Federation Union of Food, Garment, and Textile Industries Workers) and FENASTRAS (National Trade Union Federation of Salvadorean Workers) the PCS achieved control of its first confederation, the above-mentioned CUTS. The unions under the direction of CUTS have frequently taken over industries through violent tactics in cooperation with the guerrilla front organizations (BPR, LP-28, and FAPU). The role of these unions in El Salvador's Marxist struggle was highlighted by the Secretary General of FENASTRAS, Hector Bernabe Recinos, who declared in a radio interview, "The next move by FENASTRAS will be minor rebellions to give the people fighting experience and the staging of simulated uprisings in several towns." (3)

Even though the PCS inspired the formation of the FPL, the ERP, and the FARN, their respective front organizations, as well as other smaller terrorist groups such as the PRTC (Revolutionary Party of Central American Workers) and its front group the MLP (Movement of Popular Liberation), the PCS exercised very limited control over these groups. These groups, despite their similar ideologies, developed a strong rivalry for leadership within the revolutionary movement, and the PCS went so far as to label them "ultra-leftist." (4) To reduce this friction, the Cubans "tried to play the role of peacemaker between the terrorists and the Communist Party of El Salvador." (5) It was not until 1979 that the PCS joined the guerrillas, and became directly involved in El Salvador's "subversion and terrorism" through its militant arm, the FAL (Armed Forces of Liberation).

Unification of the Salvadorean Insurgency

In January 1980, largely through Cuban initiatives, the three guerrilla front organizations (BPR, LP-28, and FAPU), together with the PCS and PRTC front organizations, the UDN and the MLP formed an umbrella organization, the CRM (Revolutionary Coordinator of the Masses). Likewise, in a May 1980 meeting in Havana, as "a precondition for larger-scale Cuban aid," the leadership of the FPL, the ERP, the FARN, and the PCS set aside their ideological differences, united and formed the DRU (Unified Revolutionary Directorate). (6) "The DRU is the unified and military command of the revolution," and currently

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is composed of Cayetano Carpio, Shafik Handal, Joaquin Villalobos, Ferman Cienfuegos, and Roberto Roca, all of whom "describe themselves as Marxist-Leninist." (7) In November 1980, a subordinate group of the DRU was formed, the FMLN (Farabunda Marti National Liberation Front), by the four DRU members and the PRTC. The FMLN is responsible for coordinating and executing the leftist military struggle to depose the Salvadorean government.

Diplomatic Front of the Salvadorean Insurgency

Due to the obvious Marxist orientation within the CRM, a front known as the FDR (Democratic Revolutionary Front) was formed in April 1980 "to disseminate propaganda abroad" and to isolate the Salvadorean government from the international community. The FDR, a coalition of the CRM and the FD (Democratic Front), brought in a small "non-Marxist" element "for appearances sake." The FD, which also came into existence in April 1980, is composed primarily of Marxist groups such as CUTS, STISS, and AGEUS, and three small non-Marxist-Leninist political parties. These three "small" leftist leaning parties are the MNR (National Revolutionary Movement), the MPSC (Popular Social Christian Movement), and MIPTES (Movement of Independent Professionals and Technicians). The CRM is composed solely of Marxist groups. The AFL-CIO arm for Latin America, the American Institute for Free Labor Development, which has been involved in El Salvador's reform programs, described the FDR as "composed mainly of Marxist revolutionaries, but also containing elements of the democratic left which have joined the FDR in frustration at the inability of the moderate junta to gain full control over the government and military." (8)

The FDR chose Salvadorean multimillionaire Enrique Alvarez Cordoba, a member of the so-called fourteen families and longtime supporter of the guerrilla movement, as its first president. In 1979, Alvarez joined the BPR in the occupation of the Cathedral of San Salvador; and according to Julian Ignacio Otero, a high-ranking FPL defector, Alvarez contributed money to the guerrillas for the purchase of arms.

Following the assassination of Alvarez, Guillermo Ungo, another individual born into a wealthy Salvadorean family, was appointed to the FDR presidency. Ungo, the leader of the

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"small" MNR, confirmed during a July 1980 FDR press conference in Washington that he traveled to the Soviet Union in the 1960s. Accompanying him on the trip was Fabio Castillo, who currently is the Secretary General of the Marxist MLP. Ungo, who served in the first Salvadorean government junta for two months following the October 1979 coup, described to NACLA his motivation for resigning: "[A]s the right gained more military control, we came to see that regardless of what we or the left did or said, the military would go right ahead with its plan to exterminate the guerrillas. These groups are so close to the popular and democratic organizations that the repression fell on us." (9)

As with the Nicaraguan Sandinistas, the Salvadorean Revolutionary Movement has developed a decoy, the FDR, made up of an overt leadership of non-Marxist leftists. Their purpose is to give the insurgents international credibility despite the fact that these leaders have no significant power base independent of the Marxists who control the FDR.

The FDR has sent many diplomatic delegations throughout the world, including several to the U.S., in an effort to gain international support for the Salvadorean revolutionary movement. The most controversial of the delegations to the U.S. was headed by Farid Handal, the brother of PCS Secretary General Shafik Handal. While in the U.S., Farid Handal met with several leftist groups, such as the Communist Party (CP-USA), the Cuban Mission to the United Nations, and the Washington Office on Latin America (WOLA). Besides meeting with these logical partners, Farid Handal was received by several liberal "Black Congressmen," who vowed to "establish a permanent climate in favor of the struggle in El Salvador." However, the most significant accomplishment of Farid Handal's U.S. tour was the formation of the Committee in Solidarity with the People of El Salvador (CISPES), a lobbying group in the U.S. supporting the Salvadorean guerrillas. (9a)

The Salvadorean Catholic Church

Prior to Archbishop Romero's assassination, the hierarchy of the powerful Salvadorean Catholic Church was divided into three factions. The most liberal of these factions included Archbishop Romero and Bishop Rivera y Damas, the centrist faction was led by Bishop Revelo, while the most conservative

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of the factions included Bishops Aparicio, Alvarez, and Barrera y Reyes. However, within the rest of the clergy and religious community there were other factions, including a small group which not only collaborated with the Marxist guerrillas, but actually participated in the armed struggle with the guerrillas. This collaboration and involvement in El Salvador's subversion, particularly by "foreign Jesuits," was condemned by Bishop Aparicio. The prelate has recommended that several of these foreign priests, including Fathers Jerez, Sobrino, de Sebastian, and Hernandez, be deported. (10)

Following the assassination of Archbishop Romero, Bishop Rivera y Damas was appointed Acting Archbishop of San Salvador. The liberal postion of Bishop Rivera y Damas should not be misconstrued as supportive of the Marxist guerrillas. In fact, Bishop Rivera y Damas, has openly stated that the Salvadorean Church "does not morally support the popular insurrection being carried out by leftist organizations." Furthermore, Bishop Rivera y Damas said that "the Salvadorean left has not been honest with the people" in that they are all "inclined toward communism." (11) The recent FDR statement claiming that the Church supports the guerrillas in their fight against the junta was vigorously denied by the Salvadorean bishops. The bishops said "The fact that a small number of priests, nuns and laymen in the so-called 'peoples church' have followed a specific political option and have made a public commitment to the FDR is no reason to assume that this phenomenon is representative of the Salvadorean Catholic Church." (12)

The Guerrillas' Military Strategy

From 1970 to early 1980, the Salvadorean guerrilla organizations had concentrated their terrorist attacks primarily against selected targets within the armed forces, the business community, and the diplomatic corps. By 1979, this selected terrorist strategy began to affect a larger sector of the Salvadorean populace as business operations closed, exacerbating the country's unemployment situation. As violence spread, increasing numbers of casualties were suffered by innocent bystanders as a result of the frequent shoot-outs between the guerrillas and government forces. This guerrilla strategy of selective terrorism, however, was modified during the early part of 1980, when the guerrilla organizations started to cooperate with each other.

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They decided to attempt to depose the Salvadorean military-civilian junta through a major military confrontation, and "establish a democratic revolutionary government" free from any U.S. dependence. (See Appendix I.)

By July 1980, a high-ranking guerrilla leader, Jacinto Sanchez, defined three problem areas for the guerrillas that needed to be resolved for their strategy to succeed. The first such problem was to achieve a "unified leadership" of the revolutionary movement. This, according to the guerrilla, was "progressing rapidly." The second problem dealt with logistics, namely increasing "the fire power and strength of the armed revolutionary organizations" by training "more men for the war," obtaining additional "provisions, weapons and ammunition," and improving "communications." The final area of concern to the guerrillas was "to gain international recognition," and thereby isolate the Salvadorean government from the international community. Furthermore, Sanchez echoed the guerrillas' repetitive statement that the Salvadorean crisis could "only be solved militarily" because there was "no longer room for a political solution." (13)

At the same time the guerrilla organizations were sorting out their internal problems, they sought to expand the areas under their control from the unpopulated guerrilla-dominated zone along the Honduran border. This military expansion plan, implemented during mid-1980 (as revealed by Napolean Duarte in a November 1980 Washington meeting), consisted of assuming military control of the mountain range which divides the eastern region of El Salvador from the central and western zones, thereby splitting the country in half. This strategy collapsed because the guerrillas, numbering approximately 6,000 militarily trained individuals, were no match for the 16,000-man Salvadorean armed forces. Therefore, the guerrillas adopted a temporary strategy of "hit and run" terrorism while they continued to improve their military capabilities for the "final phase of the general offensive."

The Guerrillas' January 1981 General Offensive

By December 1980, the guerrilla forces announced that they were "in the final phase of the general offensive," since the FMLN had acquired "enough war material," including "rocket and grenade launchers," capable of destroying "military for-

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tresses and armored equipment." (14) Nevertheless, the most important factor of the guerrillas' timing of the "general offensive," which was set for January 10, 1980, was the result of the U.S. presidential election. This was pointed out by an FDR-FARN communique, which announced the general offensive "for the days prior to the presidential inauguration of the fanatical Ronald Reagan." (15) The guerrillas' strategy to overthrow the Salvadorean governing junta consisted of militarily confronting and weakening the army, acquiring popular support for a general strike, and isolating the Salvadorean government from the international community.

In spite of the massive international support for the guerrillas, the January 1981 "general offensive" failed because of four reasons. First, the guerrillas experienced logistical problems which prevented some of their units from receiving weapons in time for the offensive. Second, many of the weapons received were more sophisticated than the guerrillas had previously used; and, therefore, they were not familiar with their optimum use. Third, the guerrillas failed to incite the population for a general uprising and strike, which "the Salvadorean people completely disregarded" according to Acting Archbishop Rivera y Damas.(16 Fourth, the guerrilla hard-core cadre had recruited poorly trained youngsters to serve in the front ranks of the offensive; and once these children got killed in battle, the more experienced cadre pulled back rather than expose themselves to hostile fire.

Communist Support to El Salvador's Insurgency

With fully documented evidence collected during the Carter Administration, the Reagan Administration has shown that El Salvador has become the object of an international campaign by communist governments to destabilize the Central American region. This evidence, consisting largely of captured PCS documents, reveals the Communist bloc's involvement in supplying El Salvador's insurgency with arms and training. These captured documents disclose the trips made by Salvadorean guerrilla leaders, including Shafik Handal, to communist countries (Cuba, Nicaragua, East Germany, Bulgaria, Czechoslovakia, Hungary,Ethiopia, Vietnam, and the Soviet Union), to procure Western-manufactured arms for the Salvadorean guerrilla movement. (See Appendix II). These commitments of nearly

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800 tons of modern weapons by communist nations consisted primarily of supplying El Salvador's guerrillas with American-made arms and ammunitions which had been captured or inherited by the present regimes of Vietnam and Ethiopia.

This documentary evidence has been partly confirmed by captured arms en route to El Salvador traced back to Vietnam. In a report by the U.S. Department of State, it is revealed that:

> in late January, Honduran security forces uncover an arms infiltration operation run by Salvadoreans working through Nicaragua and directed by Cubans, In this operation, a trailer truck is discovered carrying weapons and ammunition destined for Salvadorean guerrillas. Weapons include 100 U.S. M-16 rifles and 81mm mortar ammunition. These arms are a portion of the Vietnam shipment: A trace of the M-16s reveals that several of them were shipped to U.S. units in Vietnam where they were captured or left behind. Using this network, perhaps five truckloads of arms may have reached the Salvadorean guerrillas.

A similar seizure was made in El Salvador in which a plane carrying "numerous weapons" was captured. The pilot, a Nicaraguan government employee, admitted "flying two earlier arms deliveries" to El Salvador. (17)

The Search for a Solution to El Salvador's Crisis

Negotiations to form a coalition government between the FDR and the current ruling junta are being advocated by a variety of groups around the world as their concept of a "political solution" to the crisis in El Salvador. Perhaps some of these groups honestly believe that the FDR is the "moderate opposition" or "the democratic left," as it is being called. Those who understand the FDR seek such a solution in order to shift the focal point of the Salvadorean political spectrum to the left and, thereby, accomplish through negotiations what the Marxist guerrillas have not been able to achieve militarily. Furthermore, even if successful, these negotiations would result in a government similar to the junta which succeeded the Romero government, which collapsed after two months due to the many differing ideologies among its members – including persons who are currently affiliated with the guerrillas and their front organizations.

The "political solution"being advocated by the Duarte

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government, and supported by the Reagan Administration, is a two-phased electoral process: in 1982, general elections for a constitutional assembly, and in 1983, presidential elections. In preparation for this process, Duarte has reorganized the Central Electoral Council. Its head, Jorge Bustamante, has invited all Salvadorean political groups, including the "Marxist parties," to participate in both elections. However, the Marxist parties, which are under the DRU/FDR, have shown no enthusiasm for this course, and have begun to direct violence toward the Salvadorean electoral process.

U.S. Policy Initiatives

The current overall U.S. policy toward El Salvador has to deal effectively with the existing military and political crises. Only after the military struggle with the Salvadorean Marxist-dominated guerrillas is resolved, will the Salvadorean government be able to initiate a process leading toward democratization. Thus, the principal political role of the U.S. in El Salvador should concentrate on militarily defeating those elements opposed to the democratic process, so that an atmosphere conducive to elections can be created in time for the 1982 voting for a constitutional assembly.

From the overthrow of the Romero regime in October 1979, until the eve of President Reagan's inauguration, the Carter Administration maintained a complete embargo on the supply of lethal military equipment to the government of El Salvador. Instead, the U.S. policy attempted to rely on economic assistance and the pursuit of social reforms to undermine guerrilla attacks on the Salvadorean government, and to encourage a political settlement of the conflict. However, rather than cooperating with these policies, the guerrillas and their overseas Marxist supporters increased their determination to seize control of the country through military force. The Carter policies terminated with the January "final phase of the general offensive" designed to topple the Duarte government. Only in the aftermath of this full scale, military assault, and after the fact of Communist bloc intervention was accepted, did the Carter Administration finally allow limited lethal military equipment to flow into El Salvador. In spite of the unsuccessful outcome of the guerrillas' final offensive, they have continued to pursue a policy designed to overthrow the Salvadorean government through military force.

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The Reagan Administration will probably continue and even expand support for the Salvadorean armed forces, by providing the necessary lethal and non-lethal military equipment and military advisors to offset the estimated 200 tons of military equipment already delivered to the Salvadorean guerrillas by the Communist bloc. More importantly, the U.S. assist the Salvadorean government in preventing the delivery of the future military equipment committed by communist bloc nations, but not yet received by the Salvadorean insurgency by exerting pressure on the Soviet Union, Cuba, and Nicaragua. Likewise, the U.S. could supply the Salvadorean armed forces with the surveillance equipment and training necessary to detect weapons smuggling operations. Honduras might also be encouraged to increase surveillance along the Salvadorean and Nicaraguan borders in order to uncover the infiltration routes used to supply the Salvadorean insurgency with weapons and ammunition.

Politically, the Reagan Administration will possibly encourage the Duarte government to proceed with its plans to hold supervised elections for the constitutional assembly in 1982 and the presidency in 1983. In addition, the U.S. might encourage the ruling junta in El Salvador to suspend any reform programs yet to be enacted until after the elections. When the Salvadorean people will have the opportunity to support the political program they wish to espouse.

A final area of concern to the U.S. is likely to be the Salvadorean private sector, the first target of terrorism by the Marxist guerrillas. During the last decade, the Salvadorean private sector has deteriorated to the point where its existence has been endangered, and therefore it is in need of a program to help in its recuperation. The Salvadorean government, in cooperation with other countries and international organizations, should enact a program to revitalize El Salvador's private sector. In the long run, a strong private sector will make El Salvador less dependent on foreign economic assistance.

Conclusion

The Salvadorean guerrilla organizations, which compose the leadership of El Salvador's revolutionary movement, came into existence through the various sub-divisions within the PCS (Communist Party of El Salvador) during the last decade. In 1980, these splinter groups reunited along with the PCS, as

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a precondition for large scale military aid from Cuba. However, even after their abortive January 1981 attempt to topple the Duarte regime, the guerrillas have persisted in advocating a military solution to the Salvadorean crisis. This is in spite of the Salvadorean government's invitation to the Marxist groups to participate in the upcoming elections. The guerrillas' refusal to take part in the elections is easily understandable, since their popular support has fallen, and is estimated currently at approximately 80,000 people.

The misleading assumption prevailing abroad, that the Salvadorean revolutionary movement attracts the majority of the Salvadorean people and represents most of that country's democratic sectors, is a product of a skillful international campaign by the FDR. This campaign has included providing an impressive list of organizations composing the Salvadorean revolutionary movement. In fact, some of the groups listed by the FDR consist of as few as a dozen persons, while other groups have overlapping memberships. The irony of the Salvadorean insurgency is that they have acquired a measure of international credibility as representatives of a moderate, democratic opposition despite the fact that the vast majority of its members describe themselves as "Marxist-Leninist."

The U.S. Reagan administration will surely support efforts to bring about a "political solution" to the existing Salvadorean crisis through the electoral process, rather than tolerate the seizure of power by an armed minority of insurgents supported by, and largely representing, alien powers. Through such elections the Salvadorean people can decide for themselves the political orientation and programs they wish to pursue. Thus, if any group believes it speaks for the Salvadorean people, it may demonstrate the truth of its claims through planned elections.

FOOTNOTES

(1) "Communist Interference in El Salvador, Documents Demonstrating Communist Support of the Salvadoran Insurgency," U.S. Department of State, February 23, 1981.

(2) Karen De Young, "El Salvador: A Symbol of World Crisis," *The Washington Post*, March 8, 1981, p. A21.

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(3) "FENASTRAS Preparing General Strike, Rebellions," FBIS-LAM-80-151, August 4, 1980, Vol. VI, No. 151, p. 12.
(4) *NACLA Report on the Americas*, Vol. XIV, No. 2 (March-April 1980), p. 20.
(5) Samuel T. Francis, *The Soviet Strategy of Terror* (Washington, D.C.: The Heritage Foundation, 1981).
(6) "Communist Interference in El Salvador."
(7) *NACLA Report on the Americas*, Vol XIV, No. 4 (July-August 1980), p. 25.
(8) "U.S. Labor's Role in El Salvador," Department of International Affairs, AFL-CIO, *Free Trade Union News*, Vol. 36, No. 2 (February 1981), p. 2.
(9) *NACLA Report on the Americas*, Vol. XIV, No. 4 (July-August 1980), p. 25.
(9a) "Propaganda Brainwashes U.S. On El Salvador," American Council for Coordinated Action, *Coordinated Action*, April 1981.
(10) Paul A. Fisher, "Clergy and Religious as Marxist Revolutionaries," *The Wanderer*, March 26, 1981.
(11) "Archbishop Says Church Does Not Back Insurrection," FBIS-LAM-81-013, January 21, 1981, Vol. VI, No. 013, p. P18.
(12) ACAN/EFE: January 30, 1981.
(13) "PRTC Leader: Situation Can Only Be Solved Militarily," FBIS-LAM-80-144, July 24, 1980, Vol. VI, No. 144, p. P5.
(14) "Weapons Claims," FBIS-LAM-80-253, December 31, 1980, Vol. VI, No. 253, p. P4.
(15) "FDR, FARN Communiques," FBIS-LAM-81-005, January 21, 1981, Vol. VI, No. 005, p. P7.
(16) "Archbishop Says Church Does Not Back Insurrection," p. P19. . .
(17) "Communist Interference in El Salvador."

APPENDIX

The FDR's platform is spelled out in great detail in its official publication, "El Salvador On the Threshold of a Democratic Revolutionary Victory," published in El Salvador in January 1981 by the FMLN-FDR. The tasks and objectives of the FDR are:

1. To overthrow the reactionary military dictatorship of the oligarchic and U.S. imperialism, imposed and sustained against the will of the Salvadorean people for fifty years; to destroy its criminal political-military machine; and to establish a democratic revolutionary government, founded on the unity of the revolutionary and democratic forces in the People's Army and the Salvadorean people.

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2. To put an end to the overall political, economic and social power of the great lords of the land and capital.

3. To liquidate once and for all the economic, political, and military dependence of our country on U.S. imperialism.

4. To assure democratic rights and freedoms to the entire people — particularly for the working masses, who are the ones who have least enjoyed such freedoms.

5. To transfer to the people, through nationalizations and the creation of collective and socialized enterprises: the fundamental means of production and distribution that are now hoarded by the oligarchy and the U.S. monopolies, the land held in the power of the big landlords, the enterprises that produce and distribute electricity and other monopolized services, foreign trade, banking, and large transportation enterprises. None of this will affect small or medium-sized private businesses, which will be given every kind of stimulus and support in the various branches of the national economy.

6. To raise the cultural and material living standards of the population.

7. To create a new army for our country, one that will arise fundamentally on the basis of the People's Army to be built in the course of the revolutionary process. Those healthy, patriotic, and worthy elements that belong to the current army can also be incorporated.

8. To encourage all forms of organization of the people, at all levels and in all sectors, thus guaranteeing their active, creative, and democratic involvement in the revolutionary process and securing the closest identification between the people and their government.

9. To orient the foreign policy and international relations of our country around the principles of independence and self-determination, solidarity, peaceful coexistence, equal rights, and mutual respect between states.

10. Through all these measures, to assure our country peace, freedom, the well-being of our people, and future social progress.

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APPENDIX II

Excerpt from "Communist Interference in El Salvador" U.S. Department of State, February 23, 1981

Documents Demonstrating Communist Support Of the Salvadoran Insurgency

Two particularly important document caches were recovered from the Communist Party of El Salvador (PCS) in November 1980 and from the Peoples' Revolutionary Army (ERP) in January 1981. Only a very small portion of the total documents recovered are attached. Many of the documents are written using cryptic language and abbreviations. A glossary is provided before each document to define selected relevant terms.

CHRONOLOGICAL KEY TO THE DOCUMENTS

– December 16, 1979
Representatives of the Communist Party of El Salvador (PCS), National Resistance (FARN), and Popular Liberation Forces (FPL), writing in Havana, thank Fidel Castro for his "help, and the help of (his) comrades of the Party" in establishing a unity agreement among these armed groups (See Document A).

– April, 1980
"Requests" (possibly for arms) are made in a meeting at the Hungarian Embassy in Mexico City with representatives of the German Democratic Republic, Bulgaria, Poland, Vietnam, Hungary, Cuba, and U.S.S.R. (see Document B).

– April 28, 1980
In a meeting of the Political Commission of the Salvadoran Communist Party, Party leader Shafik Handal notes the need to take advantage of possibilities for help by the "socialist camp." Their attitude is "magnificent," he says. Handal also notes desirability of involving "everyone of the area" (i.e., Central America) as suggested to "Fidel." (see Document C)

– May 19 - 31, 1980
Popular Revolutionary Army (ERP) is admitted to the guerrilla coalition after negotiations in Havana. Coalition leadership, which assumes name of Unified Revolutionary Directorate (DRU), meets with Fidel Castro on three occasions and with visiting German Democratic Republic leader Eric Honecker (see Document D).

– May 19 - 31, 1980
Guerrilla leadership meets twice with Cuban Directorate of Special Operations (DOE – clandestine operations/special forces unit of Cuban Ministry of Interior) to discuss guerrilla military plans. In addition, they met with the Cuban "Chief of Communications." (see Document D).

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– May 30, 1980
Shafik Handal departs from the Havana meeting for Moscow. (see Document D).

– June 1, 1980
Guerrilla leadership, minus Salvadoran Communist Party chief Handal, arrives in Managua. Joint Directorate of FSLN: (a) offers a headquarter for the guerrilla directorate "with all measures of security;" (b) states that it is disposed to "contribute in material terms;" (c) assumes "the cause of El Salvador as its own;" and (d) offers "advice and exchange of opinions" to the guerrillas. (see Document D0

– June 2 - July 22, 1980
Salvadoran Communist Party Chief Shafik Handal visits: (a) the USSR, (b) Vietnam, (c) the German Democratic Republic, (d) Czechoslovakia, (e) Bulgaria, (f) Hungary, and (g) Ethiopia.

– June 2, 1980
Handal meets in Moscow with Mikhail Kudachkin, Deputy Chief of the Latin American Secetion of the Foreign Relations Department of the CPSU Central Committee. Kudachkin suggests that Handal travel to Vietnam to seek arms and offers to pay for Handal's trip. (see Document E)

– June 9 - 15, 1980
Handal visits Vietnam where he is received by Le Duan, Secretary General of the Vietnamese Communist Party, Xuan Thuy, member of the Communist Party Central Committee Secretariat, and Vice Minister of National Defense Tran Van Quang. Vietnamese, as "first contribution," agree to provide sixty tons of arms. (see Documents E and F)

– June 19 - 24, 1980
Handal visits German Democratic Republic were he is received by Hermann Axen, member of the GDR Politburo. Axen states that the GDR has already dispatched 1.9 tons of supplies to Managua. (On July 2), GDR leader Honecker telegraphs GDR Embassy in Moscow, indicating that additional supplies will be sent and that the GDR will provide military training, particularly on clandestine operations. GDR telegram adds that, although Berlin possesses no Western-manufactured weapons (which the Salvadoran guerrillas are seeking), efforts will be undertaken to find "a solution to this problem.") (see Documents E and F)

– n/d
Handal visits Czechoslovakia where he is received by Vasil Bilak, Second Secretary of the Czech Communist Party. Bilak notes that some Czech arms circulating in the world market will be provided. Transportation will be coordinated with the GDR. (see Documents E and F)

– June 27 - 30, 1980
Handal visits Bulgaria where he is received by Dimitir Stanichev, member

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of the Central Committee Secretariat. Bulgarians agree to supply German-origin weapons and other supplies. (see Documents E and F)

– June 30 - July 3, 1980
Handal visits Hungary where he is received by Communist Party General Secretary Janos Kadar and "Guesel" (probably Central Committee Secretary for Foreign Affairs Andras Gyenes). The latter offers radios and other supplies and indicates Hungarian willingness to trade arms with Ethiopia or Angola in order to obtain Western-origin arms for the Salvadoran guerrillas (see Documents E and F).

– July 3 - 6, 1980
Handal visits Ethiopia where he is received by Chairman Mengistu Halle Mariam and Berhanu Bayeh, Executive Committee member. Mengistu indicates that Ethiopia will supply "several thousand weapons" and ammunition. (see Documents E and F)

– July 22, 1980
Handal is again received in Moscow, this time by Karen Brutents, Chief of the Latin American Section of the CPSU Central Committee. Brutents indicates that the Soviets agree in principle to transport the Vietnamese arms. (see Document E)

– July 23, 1980
"Comrade Bayardo" (Bayardo Arce of FSLN Directorate) meets in Managua with a delegation of the Salvadoran guerrilla Joint General Staff. Arce promises ammunition to the guerrillas and arranges a meeting for them with the FSLN "Military Commission." Arce indicates that, since the guerrillas will receive some arms manufactured by the communist countries, the Sandinista Army (EPS) will consider absorbing some of these weapons and providing to the Salvadorans Western-manufactured arms held by the EPS in exchange. (see Document G)

– July 22, 1980
Guerrilla military leadership meets in Managua, Nicaragua with PLO leader Yashir Arafat. (see Document G)

– July 27, 1980
Guerrilla General Staff delegation departs from Managua for Havana where Cuban "specialists" add final touches to their military plans. (see Document G)

– August 15, 1980
Ethiopian arms depart for Cuba. (see Document F)

– September 5, 1980
Vietnamese arms are scheduled to arrive in Cuba. (see Document F)

– September 24, 1980
Guerrillas receive and distribute five hundred thousand dollars ($500,000)

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logistics donation from Iraq. Funds are distributed to the Nicaraguan FSLN and within El Salvador. (see Documents H and J)

– September 26, 1980
Guerrilla logistics committee informs its Joint General Staff that 130 tons of arms and other military material supplied by the communist countries have arrived in Nicaragua for shipment to El Salvador. According to the report, this represents one-sixth of the commitments to the guerrillas by the communist countries. (see Document I)

(NOTE: To get an idea of the dimensions of this commitment, the Vietnamese offer of only 60 tons include 2 million rifle and machine gun bullets, 14,500 mortar shells, 1620 rifles, 210 machine guns, 48 mortars, 12 rocket launchers, and 192 pistols.)

– End of September, 1980
Nicaraguan FSLN suspends its weapons deliveries to El Salvador for one month after the United States Government protests to the Nicaraguan leadership over the supply activities. (see Document J)

– End of October, 1980
The Nicaraguan FSLN provides the Salvadoran guerrillas a new delivery schedule and resumes weapons deliveries. (see Document K)

– September – October, 1980
Guerrillas begin preparations for infiltrating weapons and equipment into El Salvador by land, air and sea. (see Documents J, L, M, N and O)

The guerrilla General Staff is informed that there are approximately 120 tons of military equipment now in Nicaragua ready for shipment to the Salvadoran guerrillas. By mid-November, the guerrillas indicate that 300-400 tons of weapons and material will be in Cuba ready for subsequent transfer to Nicaragua and then, clandestinely, to El Salvador. (see Document K)

– October 29, 1980
Guerrillas decide to open "clandestine" radio station in Nicaragua with the help of the Cubans and Nicaraguans. (see Document P)

– November, 1980
Beginning in November, the FSLN sends to El Salvador more arms than the guerrillas can receive and distribute. The guerrillas note that the boats are being overloaded in Nicaragua and ask that the FSLN better coordinate its delivery activities with the guerrillas. (see Documents O and R)

– November 1, 1980
Salvadoran guerrilla logistics representative in Managua calls on armed groups in El Salvador – the "last link" in the supply "chain" – to work harder to absorb more arms shipments. The communist countries in some

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cases, the representative notes, have doubled their promised help. (see Document K)

– November 1, 1980
Due to overloading problems, the guerrillas raise the need for talks on delivery arrangements with the FSLN. (see DOcument S)

– January 10, 1981
The guerrillas launch their "general offensive" against the Salvadoran government. It failed.

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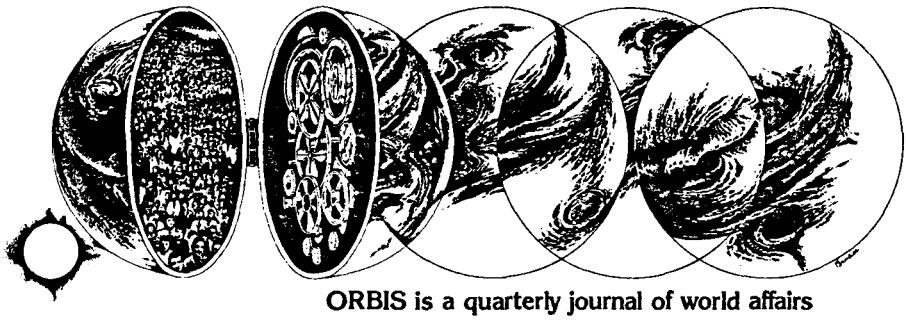

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SOVIET GOLD PRODUCTION

By David Potts

The recovery of gold is widespread in the Soviet Union and Figure 1 shows the important gold producing locations for various sources of gold. Placer, lode and by-product gold all contribute a significant proportion of the total output.

The principal gold producing areas were originally in the Urals but the emphasis moved gradually to the East as old deposits became depleted and new deposits were discovered. This eastward trend was later reversed with the discovery of several major deposits in the South West and, in 1958, a major development began at Muruntau in Uzbekistan.

In 1926 the Soviet Government prohibited the publication of statistics of gold output and since that date there have been several attempts to estimate the level of production. The problem was further complicated in 1934 when Glavzoloto, the Chief Administration of Gold Mining, stopped giving data about geological deposits. In addition the State Bank has maintained secrecy over its gold reserves since 1935.

Initial Western estimates of Russian production were influenced by an announcement in one of the early Five Year Plans that intensive geological prospecting had raised known deposits to 3,500 metric tons in 1934 from 2,500 metric tons in 1926. The Director of Glavzoloto also declared that Russia would surpass the output of the Rand Mines and become the leader in world gold production from its reserves which were 60% alluvial and 40% in lode. Although these optimistic forecasts have not been realized one of the effects was to encourage estimates of up to 600 metric tons per annum of production and monetary reserves of between 3,500 metric tons and 8,500 metric tons.

In 1964 the United States Central Intelligence Agency (CIA) published a revision of its estimates and put Russian production in the range 135 to 155 metric tons per annum with monetary reserves of 1,750 metric tons. The published evidence for the much lower figures mentioned the abandonment of workings operated by forced labour in Stalin's day and assumed that the depletion of reserves resulted from gold sales

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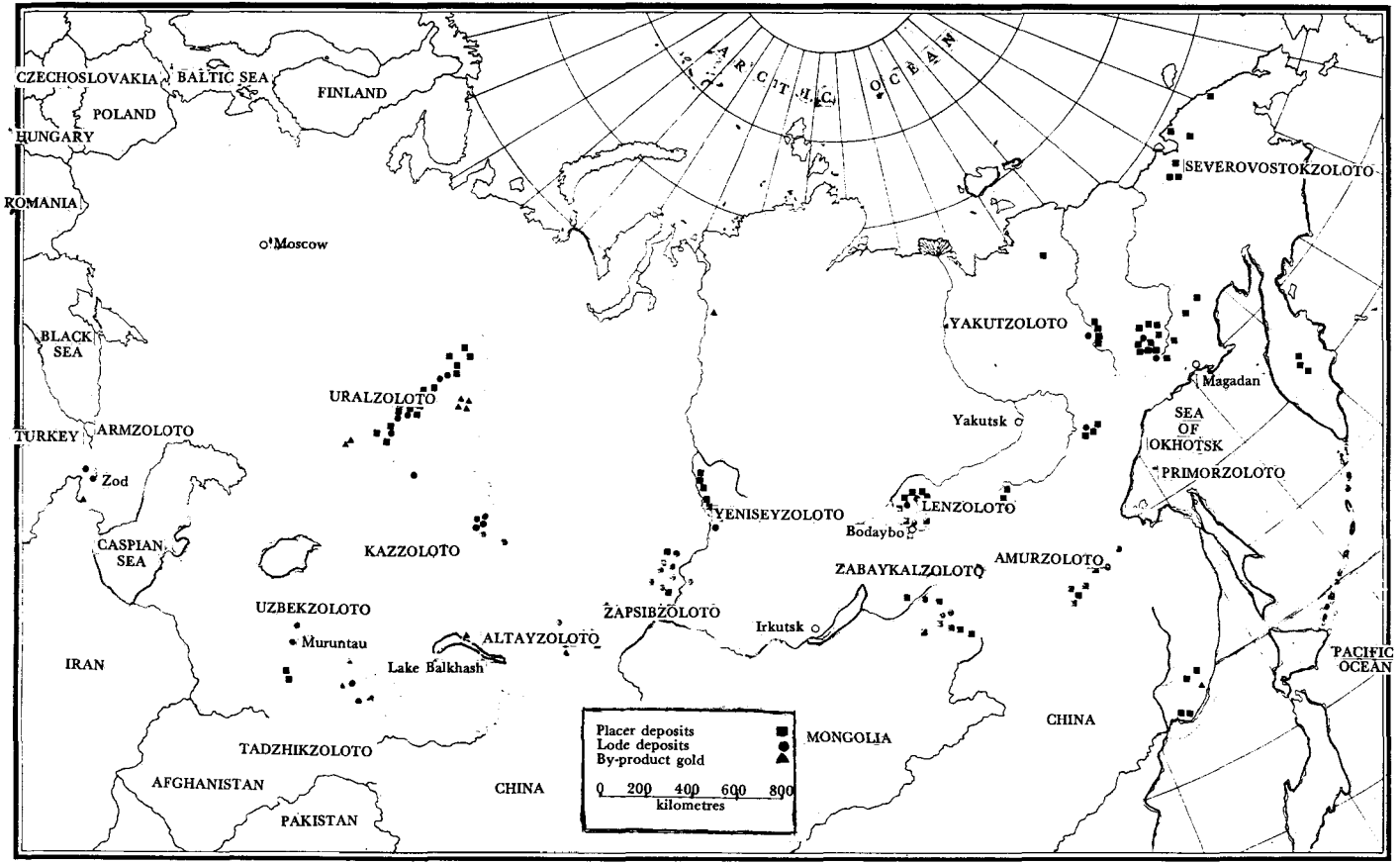

Fig. 1 — Important Gold Producing Areas and Administrative Units in the Soviet Union

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to the West. It has been suggested, however, that the main evidence was a Party Central Committee document which had been photographed and transmitted by Colonel Penkovsky. Most of the Western observers began to use the CIA figures.

Consolidated Gold Fields Ltd., began to make a contribution to this debate at the beginning of the 1970s and the method adopted was to translate and collate the press reports and technical papers which were available in the West. The information was from public Soviet sources which concentrated on individual gold producing areas and made reference in percentage terms to the extent to which targets had been met, the rate of growth of output and additions to ore reserves. The targets and production figures were not given and had to be estimated.

In 1974 Consolidated Gold Fields Ltd., began to use an additional method for estimating Russian gold production. The principal effort was concentrated on information about the type and size of equipment and processes which were being used for mining and extracting the gold. The quantity of material treated was estimated from the nature of each operation and the related numbers, types and sizes of the machines being used. There was also an assumption, which now seems unlikely, of a reasonably full and efficient usage of that equipment. The gold content of the materials treated was derived partly from Soviet references and by comparisons with Soviet workings elsewhere.

A further refinement was introduced in 1978 when satellite photographs began to be used to supplement the techniques which have been outlined above. The results which have been obtained during the last two years are given in the remainder of this report and consist of descriptions and estimates of annual outputs from the Muruntau deposit, the Zod deposit and from By-product operations. Finally, we give details of the administrative organization of the Soviet gold industry.

Consolidated Gold Fields Ltd., are continuing to study and analyze available information on the remaining sections of the Russian gold mining industry but some tentative conclusions are now beginning to be drawn about total production.

At this stage, it is estimated that the annual output is in the range of 280 to 350 metric tons and this leads us to the conclusion that some of the Communist bloc sales of over 400 metric tons per annum in 1976, 1977 and 1978 were drawn from stocks.

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The Muruntau Complex

The Muruntau gold fields lie in the centre of the Kyzylkum (Red Sands) desert at the foot of Muruntau (Nose Mountain), which is at the South East extremity of the Tamdytau ridge of mountains. Gold was discovered here in 1958 and the subsequent widespread exploration that was carried out, largely by trenching through the 1-2 metres of red sand overburden and by core drilling the underlying bedrock, ultimately revealed the largest gold deposit yet discovered in the Soviet Union.

The Muruntau deposit has been described as tree-shaped. The trunk (which extends down to a considerable depth and will be mined by underground methods) contains a significantly higher grade of ore than the branches, which constitute the part of the deposit now being exploited by an open pit operation.

The gold at Muruntau occurs both in large quartz veins (up to 20 metres thick and 300 metres long) and in the stockwork formed by smaller quartz and sulphide (pyrite and arsenopyrite) veins. In fact, the ore zone as a whole constitutes a large stockwork that covers an area of about 4 km^2, within which the gold-enriched areas are distributed very irregularly. In all, there are five ore zones, separated from the comparatively barren zones by indistinct and indefinite boundaries that can be established only by sampling. Soviet geologists who have been working in the area since its discovery still do not agree completely on the detailed genesis of the Muruntau deposit, but most believe it to have been a complex, multistage process that involved repeated metamorphic and hydro-thermal activity.

Free gold, which accounts for virtually the entire gold content at Muruntau, occurs in two varieties: one averaging about 900 fine, the other about 750 fine. The higher-purity gold occurs in the upper part of the deposit and is believed by some researchers to have a different origin than the lower-purity material found at depth. The gold ranges in size from very fine (less than 0.001 mm) to relatively coarse (up to 1 mm).

Gold typically occurs in the quartz veins in unevenly disseminated, fine inclusions and veinlets located between the individual quartz grains and also where sulphides have formed. The sulphides, which account for only 0.5 — 01.5% of the Muruntau ore, also contain very fine gold, again located in the grain boundaries and associated particularly with the arseno-

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pyrite, which accounts for about 20% of the total sulphide content.

The development of Muruntau has been a major undertaking. In the early years, water was trucked to the construction sites from an artesian well in Tamdybulak, 50 km to the north. Before the mill could begin, however, a 1.2 metre water pipeline had to be laid from the Amudar'ya River 220 km to the South West. Now, two parallel water lines serve the area. The construction programme has received much local recognition — especially Zarafshan, a new city of 3 to 9 storey apartment buildings constructed 30 km west of Muruntau to house 40,000 inhabitants. Zarafshan is regarded as the gold centre of western Uzbekistan, serving not only the Muruntau complex, but also the other gold-producing areas in western Uzbekistan and the uranium operations also believed to be in the region.

Located just north of the Muruntau open pit is the town of Muruntau, which consists of a few hundred small, one-storey houses where the miners and some of the mill personnel live. Construction of both the open pit and the mill-refinery processing complex started in the spring of 1967, and the first gold bar was poured on July 25, 1969. The first phase of construction was completed in the early 1970s, with a two-or-three-fold expansion in both the mine and mill facilities begun immediately thereafter.

The Muruntau deposit is being exploited by both open pit and underground workings. Measuring about 1 x 2 km the open pit operation also is notable for the waste dumps rimming the edge of the pit to the west, south and east, some of which rise 100 metres above the desert floor. Mining is carried out using 4.6 m^3 and 6.0 m^3 shovels that load 27 ton and 40 ton trucks. Ultimately, the open pit will be developed to a depth of 300 metres. There is the possibility that selective mining is being practised here, with marginal ore being stock-piled.

Undergound, the mining shaft presently extends to 500 metres, with workings at various levels. Figure 2, a plan of the Muruntau region, shows the town of Muruntau, the mining areas, processing facilities, settling ponds and the various interconnections.

It is estimated that the output from Muruntau is about 80 tons per annum and that this level of production can be maintained for many years to come.

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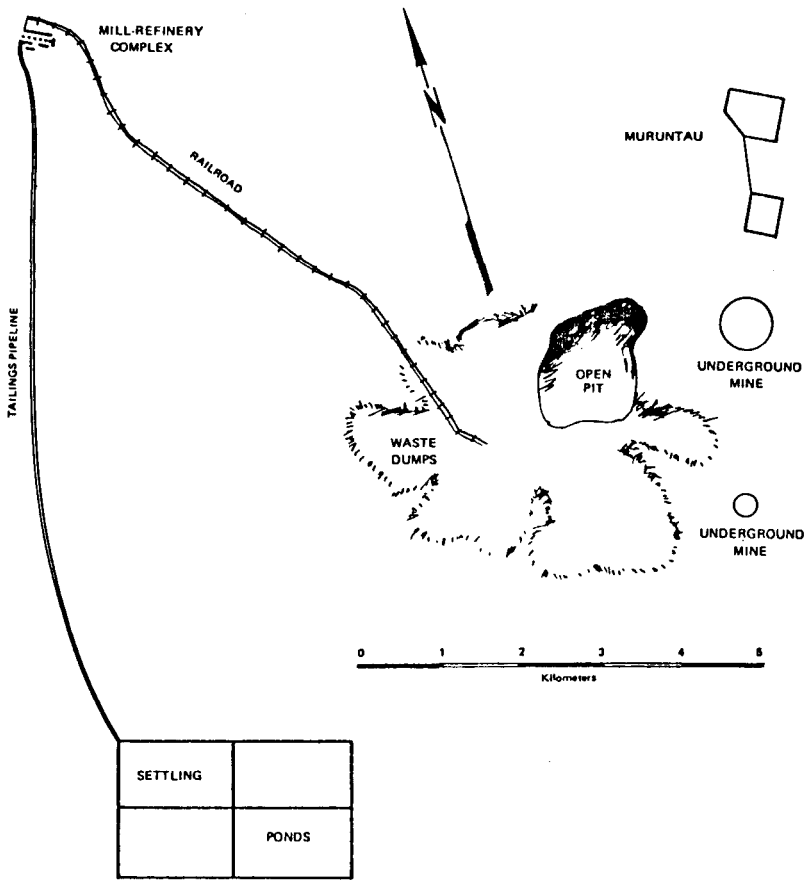

Fig. 2 – The Muruntau Mining Area
An interpretation of Landsat image.

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The Zod Combine

Zod is one of several gold deposits that have begun to be exploited in Armenia. In contrast to the low-grade but very large deposit at Muruntau, these deposits are small but quite high-grade. Zod, the largest of these, justified the formation of the Zod Combine which recently constructed a mining-milling refining complex at a cost of 160 million roubles.

The Zod gold deposit is located in a mountain divide 110 km north-east of the Turkish border at an elevation of 2,200-2,500 metres. Placer deposits in nearby rivers were worked in Neolithic times (the late Stone Age) and by 1200 BC the outcroppings of the Zod deposit had been discovered and were being worked by trenches 1 metre wide and 5-6 metres deep. By 200 AD the richest ores from this deposit were being exploited by extensive underground mining operations. When the richest ores were exhausted, these underground workings were abandoned. Rediscovery of the Zod deposit in modern times dates only from 1951 when investigation, first of the river placers and then of the ancient mountain workings, pointed the way to the underlying ore.

The Zod deposit consists of oxidized ore near the surface, primary sulphide ore at depth, and a mixture of both types of ore in between. These mixed ores reportedly comprise the bulk of the ore in the Zod deposit. Mineralization is localised mainly in four fracture zones which dip steeply (70-85°) to the south, and within which 28 discrete ore bodies have been delineated. Gold occurs in these ore bodies in four forms – coarse native gold located between the grains of vein and ore minerals, native gold finely dispersed in sulphide minerals, discrete gold telluride minerals, and gold derived from the disintegration of telluride and sulphide minerals. Although finely dispersed gold predominates, some of the coarse flakes measure over 1 cm across. Polymetallic ore from this deposit averages 20 grams of gold per ton, pyrite-arsenopyrite ores average 40 grams per ton and gold telluride ores average about 300 grams per ton; in all cases the free gold ranges between 850 and 950 fine. Tellurium as well as silver occurs in economically recoverable quantities in these ores.

The Zod deposit is being mined by both open pit and underground (adit) methods. Originally, the Zod ore was to be processed in a small facility, only 5 km from the deposit, where a

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beneficiation pilot plant was set up in 1967. However, similar gold ores soon were discovered to the west of Lake Sevan, relatively close to an existing rail line and, after considering the possibility that Lake Sevan could be contaminated by cyanide-containing effluent if the plant were located near the mine, the decision was made to construct the beneficiation facility to handle all these ores in the towns of Ararat.

Ararat lies 30 km to the south-east of Yerevan, the capital of Armenia, at the foot of Mt Ararat. To transport the Zod ore to the Ararat mill required construction of 122 km of track to connect the mine with the existing rail line which runs up the west side of Lake Sevan. This connection was completed and the first ore delivered to the Ararat plant in February, 1976.

The Ararat facility also treats ores from Megradzor, Kefan, Kirovakan, Razdan and Stepanavan.

Other Armenian ores in which gold is associated principally with copper minerals are handled in separate beneficiation facility located in the town of Agarak in the southern part of Armenia.

In the Ararat mill primary grinding of the ores takes place in two semi-autogenous cascade mills. The ore then is treated in jigs and shaking tables to produce a gravity concentrate containing the coarse native gold and tellurides. The tailings from this operation (with sulphide and mixed ores) are treated by flotation to produce a concentrate which contains the gold-bearing sulphides and finer telluride minerals, The flotation tailings (the tailings from the shaking tables with oxidized ores) are reground in four ball mills and cyanided to recover additional gold values.

Original plans called for the Zod Combine to use the traditional method of precipitating the gold from the cyanide solution with zinc dust. In fact, this process was used in the pilot plant at Zod to produce metallic gold. However, following the successful introduction of RIP ion-exchange techniques into the Soviet gold industry at Muruntau and other facilities, the Zod Combine adopted this technology for its Ararat facility.

All of the gold-producing facilities in Armenia come under the administration of Armzoloto — one of the newest additions to the administrative organizations of the Soviet gold industry. Formed to oversee the development of gold in Armenia, Armzo-

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loto is a product of the trend in recent years toward the development of lode deposits in the South Western Soviet Republics.

The estimated output of gold from the Zod Combine is 10 metric tons per year and it is believed that reserves are adequate for 20 years of operation at this rate of production.

By-Product Gold

By-product sources of gold have long been important in the Soviet Union. In recent years copper ores have accounted for about 75% (44 tons in 1977) of total Soviet by-product gold production. The two largest producers are in Kazakhstan. The major Kal'makyr deposit, which produces 23 million tons of copper ore per year, is the principal source of by-product gold – more than 17 tons per year. The Kounrad deposit yields about 8 tons. The numerous copper deposits of the Urals are next in importance, yielding as a group about 13 tons of gold. The copper deposits of southern Armenia are the other important sources of by-product gold in the copper industry.

TABLE I

Estimated by-product gold from copper ores in 1977

Deposit	Ore Production (tons per year)	Gold Analysis (grams/ton)	Recovery (%)	Production (tons)
Gay	6,000,000	1.2	70	5.04
Sibay	4,000,000	0.8	70	2.24
Degtyarsk	1,500,000	1.4	70	1.47
Pyshma	3,500,000	1.0	70	2.45
Buribay	300,000	1.2	70	.25
Turinsk	1,100,000	1.0	70	.77
Levikha	1,000,000	0.8	70	.56
Blyavinsk	800,000	1.2	70	.67
Urals total				13.45
Kounrad	14,000,000	0.8	75	8.40
Kal'makyr	23,000,000	1.0	75	17.25
Kadzharan	6,000,000	0.6	70	2.52
Agarak	2,100,000	0.6	70	.88
Kafan	500,000	0.6	70	.29
Other	3,000,000	0.7	60	1.26
			Total	44.05

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Lead-zinc ores (including a number of deposits of complex lead-zinc-copper ores) provide about 25% of the total production of by-product gold in the Soviet Union. The most important source in this group is the Almalyk complex, which recovers 4 tons of gold annually from 5.5 million tons of ore mined in the Kuramin Mountains of Tadzhik. The most important other source is the group of deposits around Ust 'Kamenogorsk in Kazakhstan, where over two-thirds of the Soviet reserves of lead and zinc are located. Other producers are found in Azerbaydzhan and Primorskiy Kray. All together, the lead-zinc ores of the Soviet Union in 1977 yielded about 16 tons of gold annually. In total, then, by-product sources yielded an estimated 60 tons of gold in 1977.

TABLE II

Estimated by-product gold from lead-zinc ones in 1977

Mill/Ore	Ore Production (tons/year)	Gold Analysis (grams/ton)	Recovery (%)	Gold Production (tons)
Leninogorsk				
Leninogorsk Mine	700,000	1.0	75	.525
40-Letiye VLKSM	500,000	1.0	75	.375
Open Pit 1	1,000,000	0.9	75	.675
Tishinskiy Open Pit	2,500,000	0.6	75	1.125
Zyryanovsk	3,000,000	0.8	75	1.80
Belousovka	900,000	0.8	65	.47
Berezovka	500,000	0.8	69	.28
Zolotushinskiy	700,000	0.8	55	.31
Achisay	3,400,000	0.8	75	2.04
Almalyk				
Altyn-Topkan	1,500,000	1.2	75	1.35
Kurgashinkan	4,000,000	0.9	75	2.70
Filizchay	2,500,000	1.4	70	2.45
Tetyuke	1,500,000	1.0	75	1.13
Other	2,000,000	0.8	50	.80
			Total	16.03

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Although by-product gold is important to the Soviet Union it is negatively influenced by some of the unusual accounting practices employed in the Soviet nonferrious metals industry. For example, often a mine-mill manager receives no credit for gold contained in the base metal concentrate he produces because the concentrate is sent to a base metal smelter which does not have integrated gold recovery facilities and therefore that concentrate is valued only according to its copper or lead and zinc content. Likewise, base metal smelter managers are judged primarily by the output of their principal products, so the content of other valuable metals in their product is of only secondary importance and unrelated to their inherent value. Also, in existing base metal concentrators, the prices paid for the gold produced do not allow for compensating the concentrator for capital expenditures required to increase recoveries. Finally, in contrast to the capitalist system, where prices depend on supply and demand, in the Soviet economy the price depends on production costs. It is recognized that a profit is required for the industry to generate the funds needed for future expansion, but this again is an average profit. In fact, in the 1960s five of the six largest copper mines in the Urals were losing money. And losses are not necessarily minor. Examples may be found in which the production costs of even major mines, equipped with modern equipment, are double the sales value of the ore being recovered.

This paradoxical situation is resolved by subsidizing the high cost operations to whatever degree is required to bring them into line. This practice applies throughout industry, to all aspects of mining and manufacturing, and its effects are magnified by the practice of stable prices fixed by what is equivalent to law.

Administrative Organization of the Soviet Gold Industry

All segments of the Soviet gold industry ultimately report to the Council of Ministers whose policy is coordinated with the Communist Party of the Soviet Union (see Figure 3). The agency directly responsible for gold output is the Ministry of Nonferrous Metallurgy. The annual production goal is strongly influenced by Gosbank and the Ministry of Foreign Trade, which each year have the task of balancing Soviet hard currency imports and exports. External sales of gold bullion are the

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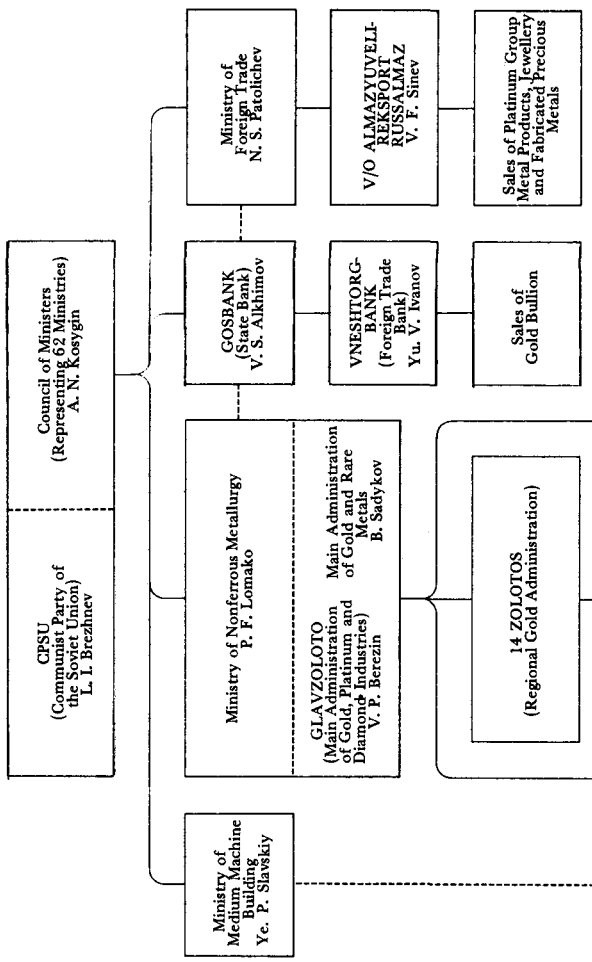

Fig. 3 – Administrative Organization of the Soviet Gold Industry

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responsibility of Vneshtorgbank's worldwide organization. Sales of fabricated gold products to the West are handled by Almazyuvelireksport which also maintains offices in each of the industrialized countries.

Within the Ministry of Nonferrous Metallurgy, Glavzoloto and the Main Administration of Gold and Rare Metals are responsible for meeting established production goals for gold. This task is accomplished principally through 14 regional administrative organizations known as 'zolotos'. While zolotos do not envelop the entire Soviet Union, they do cover and are responsible for most gold producing regions. (see Figure 1)

The zoloto administrative system has been developed mainly to facilitate the management of the large number of far-flung placer deposits which are worked in the Soviet Union. Typically, however, each zoloto is responsible for the discovery, exploitation and recovery of any primary gold deposit which occurs within its borders. Thus, all the gold lode and placer deposits in the Urals come under Uralzoloto, Lenzoloto supervises those which occur on the upper reaches of the Lena River and its tributaries and Severovostokzoloto administers the gold industry in the Magadan Oblast in the north-eastern corner of the country.

There are exceptions to this rule, however, the most important of which is Muruntau. It is probably administered outside the zoloto system more because of its pioneering use of RIP technology than its large size.

Administratively, by-product facilities seldom report through the zoloto system. However, if they produce only a gold-containing mud or other concentrate, these products can be sold to the appropriate zoloto to be refined.

Whatever its source, the refined gold ultimately is delivered to the national treasury where it is stored until needed for use by domestic Soviet industry or for sale to the West to earn hard currency credits.

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HIGHER EDUCATION IN MAINLAND CHINA SINCE THE CULTURAL REVOLUTION

By Wang Hsueh-wen

It is significant to recall that in the days of the "cultural revolution" the implementation of a "revolution in education" centering on "reform of college education" was officially declared a task of paramount importance to be accomplished by all means and at all costs throughout the Chinese mainland.

The hostile attitude of Mao Tse-tung towards the Chinese intellectuals was in fact an important factor of the "reform." He once said: "Whereas in the past I had cherished the hope of cultivating from among the intellectuals a number of successors, I now no longer consider it wise to do so. In my opinion, the weltanschauung of the intellectuals either within the party or outside the party, including the educated young people still receiving education in schools, is the bourgeois weltanschauung. For more than 10 years since liberation, our culture and education were under the control of revisionism, and bourgeois thinking has therefore existed in the blood of our intellectuals." (1)

The policy of the regime towards the intellectuals was a self-contradictory one. It advocated that the intellectuals should be boldly offered jobs and used, but they ought to be watched and prevented from embarking on the road leading to a possible revival of the old world.

In the Shanghai *Wen Hui Pao* we read this description of the critical state of affairs in colleges and universities in mainland China: The paper wrote: "Colleges and universities are indeed beset with a series of 'old, big and difficult problems!' They are a good market place for enhancement of 'egoism', a place abounding with loafers, a cradle of "mountaintopism" (regionalism), sectarianism, and individualism. It's much more difficult and complicated to solve the problems of a university than the armed struggle of a factory." (2)

It was against the background of this deplorable state of affairs in the higher educational institutions that voices calling for abolition of colleges and universities were heard in 1967.

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In Peking Teachers University an advocacy was set forth in July 1967, suggesting that schools at all levels be transformed into affiliated schools of rural communes, factories, or PLA units. The advocacy called for implementation of "three abolitions," that is, "abolition of universities and secondary schools, retention of elementary schools:" "abolition of graduation system and upgrading-degrading system:" "abolition of affiliated schools." (3)

In July-August 1968, when "workers' propaganda teams" were sent into colleges and universities and stationed there to play a supervisory role, many voices suggested that "Since colleges and universities are in a mess, why not close down all of them?" (4)

Mao's "directive on education in colleges of sciences and engineering" said: "Colleges must continue. What I mean here specifically is that colleges of sciences and engineering must go on educating the masses of the people, but the system of education has to be shortened, and there should be a revolution in education. It is necessary to put proletarian politics in command and to follow the footsteps of the Shanghai Machinery Plant in selecting from among workers the technical personnel for education and cultivation. We must recruit students from among workers and peasants having experience in the actual practice of production."

In this directive of Mao we see that a key objective of the college education in the days of the "cultural revolution" was the recruiting of workers and peasants for higher education, with the intention that they be sent back to factories and communes after graduation.

The question of retaining or abolishing colleges of literature and arts was brought up for discussion long before the "cultural revolution."

During his lifetime Mao had openly deplored time and again that "students majoring in literature and arts are most backward, because they have little contact with the reality." On August 29, 1964, when receiving an educational delegation from Nepal, Mao said: "Generally speaking, the intellectuals taking part in industrial work are relatively better, because they stay closer to the reality. The intellectuals in the domain of sciences – pure sciences – are not so good as those performing industrial work, but they are better than the intellectuals in the field of litera-

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ture and arts. Most seriously divorced from reality are the intellectuals in the realm of literature and arts. All of them, majoring either in history or economics, have seriously isolated themselves from reality. They are ignorant of events in the world." (5)

To the Nepalese delegation Mao added emphatically: "It is not permissible to have students possessing only bookish knowledge and never taking part in manual work."

The leadership of the Revolutionary Committee of the Hopeh University advocated that the department of literature and arts be separated from the department of sciences, and that the department of literature and history and philosophy be amalgamated to form a "college of cultural revolution." (6)

In the *People's Daily* reports we see that the spearhead of "reform" was directed mainly at colleges of literature and arts. A tragic result of this "reform" was the transformation of a large number of the colleges of literature and arts into "Mao Tse-tung Thought Study Classes," "Exploration Teams of Revolution in Education (or Practising Teams)," and "Writers Sections of Revolutionary Mass Criticism and Repudiation." This transformation brought about a series of chain reactions and impacts on the policy of "revolution in education," causing vacillation and plunging it into unending changes. (7)

The salient features of "educational reform" in the days of the "cultural revolution" were "shortening of the period of schooling," "reform of educational system," "simplification of curricula," "recompilation of teaching materials," "modification of examination system," and "stationing of workers propaganda teams at schools to play a supervisory role," throughout the mainland provinces and municipalities.

It is known to all that all these measures of "reform" were directly responsible for a sharp and general deterioration in the quality of education. In 1975, some educators and teachers on mainland China were so bitterly disappointed in the worsening quality of education that they openly advocated a revision of the regime's orientation of "revolution in education." (8)

Today, the Chinese intellectuals and the visitors touring mainland China are still highly critical of the "revolution in education." In an article entitled "Legislation Is Essential to Education" Liu Yung wrote: "In the domain of education there had cropped up years ago a lot of queer phenomena, such as,

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the indiscriminate revision of teaching schedules, the indiscriminate changes of curricula and teaching materials, the indiscriminate transgression of the human rights of educational workers, the indiscriminate deprivation of the rights of people to work, the indiscriminate alteration of the characteristics and tasks of schools, the indiscriminate policy of regarding participation in simple production and manual work as a principal form of teaching at schools, the indiscriminate abolition of the system of matriculation for admission of new students . . ." (9)

Chang Szu-shen, head of the department of mechanical engineering and turbine engineering, the Hongkong College of Science and Engineering, in an article entitled "Major Reform of Chinese Universities in Past Two years" wrote: "Early in the 1970s, universities in mainland China had been suspended for a number of years. In the summer of 1973, while I was visiting the Communications University in Shanghai, classes of the university were not yet officially resumed. The campus was like a deserted land covered with weeds growing up to the length of knees. In that year classes were just resumed in the Peking University and the Tsinghua University, but there were not much activities going on. I visited the two universities, and the people coming out to greet me were for the most part students. While we were talking about conditions for admission of students, they said: 'One may apply individually for admission, but it's definitely necessary to have support from the masses of the people and approval from one's supervisory organizations at the higher level, plus several years of experience as a workingman in factories or a peasant in rural communes.' These are the essential conditions of admission, but one does not have to go through a rigid test or entrance examination. In these circumstances the new students admitted are of poor quality, and an enhancement of their knowledge is highly difficult, for the ascendancy of students to higher grades is not based on a testing of what they have learned at school. Students are reluctant to take tests." (10)

Since the cultural revolution, the new regime's leadership organizations have frankly brought to light some problems and defects facing the "educational reform." In February 1979, when a "National Conference of Scientific Research Work in Higher Educational Institutions" was being held jointly by the State Commission of Sciences and Technology, the Ministry of

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Education, and the Ministry of Agriculture and Forestry, to discuss the question of further changes in the principal orientation of work in higher educational institutions, the participants pointed this out: "In the 17 years preceding the cultural revolution, the higher educational institutions had accomplished a mainlandwide upbringing of 1,550,000 graduates of full-time colleges, 16,000 university postgraduates, and 138,000 college teachers, seven times more than the number of college graduates, university postgraduates and college teachers cultivated and trained in the years ending 1949. In the 11 years of the cultural revolution, colleges and universities stopped recruiting new students for five years in a row, thereby resulting not only in an unprecedented withering of higher education, but also in a decrease of over 1,000,000 college graduates and about 20,000 university postgraduates. This brought about a serious shortage of new men of specialties to replace the old ones, and the result was quite disastrous for the implementation of the four-modernization program." (11)

The conference ultimately came to this conclusion: "Today a cardinal task of the whole party is being shifted to the socialist building of modernization. The four-modernization program is centered on modernization of science and technology, whereas an important foundation of the upbringing of our scientific and technological personnel is education. It is therefore necessary and imperative to make our higher educational institutions simultaneously educational centers as well as scientific research centers."

Policy of Education

In the opinion of the regime now holding the baton of power, the Gang of Four was directly responsible for an irreparable destruction of education in the period of the "cultural revolution." (12)

A basic problem to be corrected is that since 1949 all schools have been placed under a dual leadership — the leadership of party organizations and the leadership of educational departments. Mao once said: "The first secretaries of party committees in all provinces and regions and counties must exercise leadership over education. . . It is not permissible for party committee secretaries to stand aloof from education." Liu Hsi-yao, the former Minister of Education, stressed: "Secretaries of

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party committees at all levels must regard education as an important agendum. They are required to secure a firm hold on education several times a year and to attain a timely settlement of important questions in work. Comrades on the educational front must strive energetically to do well educational work under the leadership of party committees at all levels." (13)

More recently, as is indicated in the following instances of the People's University of China and the Chekiang University, we have seen the regime's implementation of a new system of "dual leadership" in the higher educational institutions.

People's University of China:

The predecessors of the People's University of China were the North Shensi Institute, the Associated University of North China, the Northern University, and the North China University. In 1950 the North China University was renamed the People's University of China, and in 1970 it was first suspended and later abolished, with some of its departments merged into other universities, teachers dismissed, educational equipment and library facilities sustaining heavy losses. In July 1978, the CCP Central Committee and the State Council jointly approved the rebirth of the People's University of China at the original site in Peiping.

The rebirth of the People's University of China brought with it a simultaneous revival of its former 12 departments of philosophy, political economics, international politics, history, planned statistics, finance and trade, industrial economy, agricultural economy, Chinese language and literature, journalism, law and archives. Also reestablished at the time were the six institutes of the history of the development of Marxism-Leninism, the USSR and East Europe, languages and literature, the history of the Ching dynasty, management of foreign economy, and the theory of population. To meet the needs of "the general tasks of the new era," the department of finance and trade was divided into two departments, namely, the department of finance, the department of trade and economy. The department of history was also broken up into two departments, namely, the department of the history of the CCP and the department of Chinese history. The department of international politics was renamed the department of scientific socialism. In addition, to a new department, the department of economic management, was created in the university. Also revived were

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the university's hospital, factory, publishing house, printing office, materials and data office, affiliated elementary and secondary schools.

Chekiang University:

The Chekiang University is the second of the essential universities on mainland China. After a preliminary adjustment of its departments and professional course of study, the university has today retained 15 departments, including the department of mathematics, the department of physics, the department of chemical engineering, the department of optical engineering, the department of computer science, the department of engineering and material science, the department of engineering and thermo physics. The 15 departments of the university recruit students from all provinces and municipalities. Following a reform of its academic years system and a tentative implementation of its academic credits system, the university has been placed under the dual leadership of the China Academy of Sciences and the educational department of Chekian Province, with the former playing a dominant leadership role since July 1978 when the State council approved a decision on the question of leadership. In the days to come the university is expected to attach more weight to cultivation of scientific and technological personnel who could turn out to be "ideological advanced and professionally skilful." (14)

Especially worthy of attention is the fact that in schools of all descriptions the leadership cadres of the CCP represent almost 25 percent of the total number of teachers. In a provincial college of Chinese medicine, for example, there are as many as 11 vice presidents assisting the president in running the college.

Academic Degrees System & Academic Ranks System

On August 5, 1955, the State Council approved a set of "Provisional Rules and Regulations on Postgraduates of China Academy of Sciences," which stipulated that the postgraduates of the China Academy of Sciences upon completion of their courses of study would be conferred a "vice doctor's degree in science." However, as a result of "the interferences of the ultra-leftists," who regarded the academic degrees system as "a bourgeois or revisionist system," the rules and regulations

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were in fact not carried into effect, but were condemned and transformed into a "taboo." (15)

In recent years, efforts were made to establish a system of academic degrees in all higher educational institutions. The Nanking University, one of the leading universities in mainland China, is scheduled to carry out a system of academic degrees in the school-year 1980 on a tentative basis. The system confers on students the degrees of bachelor, master, and doctor.

Today the university students of mainland China are all required to accomplish a thesis, in addition to an individual acquisition of 120 to 140 credits, as a requisite of graduation. The two official reasons given for creation of the academic credits system are: (1) It is to meet the needs of students going out to foreign countries for advanced education. (2) It is necessary to have a system for certification of the academic achievements of students after years of study and research. And this too is considered one of the means of enhancing and improving the quality of education. (16)

On February 12, 1980, a 20-article decision governing "Rules and Regulations on Academic Degrees of the People's Republic of China" was adopted at the 13th session of the Standing Committee of the Fifth National People's Congress. The major provisions were as follows:

(1) "The citizens who are in support of the leadership of the Communist Party of China and the socialist system and who have reached a definite academic level are eligible for application of a corresponding academic degree in compliance with this 20-article decision." (Article 2)

(2) "The State Council has established under its supervision an academic degrees committee which takes charge of the work of conferring degrees on graduating students of the whole country." (Article 7)

(3) "Academic degrees are of three different categories: bachelor's degree, master's degree, doctor's degree." (Article 3)

Also restored in many higher educational institutions and research organizations is a system of academic ranks (position titles of teachers), under which teachers are classified into three categories — lecturers, associate professors, professors — and research workers are divided into three grades — assistant researchers, deputy researchers, researchers. (17)

In 1979, the number of the young people registering for

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matriculation amounted to a total of 10 million, of whom 7 million were secondary school graduates of the year and 3 million were workers and employees holding jobs in cities. Of the 10 million young people, only 4.70 million actually took part in matriculation, of whom 67 percent were secondary school graduates of the year. The result of matriculation showed that 300,000 young people were selected for higher education from among the 4.7 million competitors. This meant that the 4.4 million young people who failed in the matriculation had to be sent down to rural areas or border regions for participation in production or reclamation work.

Subjects of Matriculation

The recruiting and testing of students for admission into the higher educational institutions in 1979 were conducted on a unified basis, with the Ministry of Education in Peiping providing unified topics of matriculation and the educational departments in the various provinces and municipalities and autonomous regions supervising and assessing the matriculation. For students competing to get into the college departments of literature and history the subjects of matriculation are politics, Chinese language, mathematics, history, geography, and foreign languages. For students competing to enter the college departments of science, engineering, agriculture and medicine the subjects of matriculation are politics, Chinese language, mathematics, physics, chemistry, and foreign languages.

In the "General Outline of Matriculation" (1979) published by the Ministry of Education we see that "politics" was put on top of all subjects, and that students taking the matriculation were required to secure a preliminary mastery of the elementary principles of Marxism-Leninism and Mao Tse-tung Thought; to make an analysis of realistic questions by applying Marxist standpoints, viewpoints, and methods; to criticize and repudiate the counter-revolutionary revisionist line of Lin Piao and the Gang of Four; to take a clear cognizance of current events and political trends in mainland China and in the international arena. Students taking the matriculation were also urged to make a penetrating study of a number of "political platforms," the essential contents of which are summed up as follows: (18)

(1) The Revolution of the Proletariat

A. The fundamental question of the revolution of the pro-

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letariat is the question of political power.

B. Violent revolution is a universal law of the revolution of the proletariat.

C. It is necessary and imperative to criticize and repudiate the fallacy of "peaceful transition" in modern revisionism.

(2) The Dictatorship of the Proletariat

A. The importance of the dictatorship of the proletariat in the entire historical stage of socialism.

B. Criticism and repudiation of the counter-revolutionary crimes of Lin Piao and the Gang of Four in making a revision of the characteristics and tasks of the dictatorship of the proletariat.

(3) Continuation of Revolution under the Dictatorship of the Proletariat

A. Correct distinction and disposal of two categories of contradictions of different characteristics.

B. The features and targets and motivating force of the continuation of the revolution under the dictatorship of the proletariat.

C. The Gang of Four is a sworn enemy of the theory of continuing the revolution under the dictatorship of the proletariat.

(4) Firm Adherence to Marxism, Strong Opposition to Revisionism

A. Revisionism is a renegade of the revolution of the proletariat and the dictatorship of the proletariat.

B. The great significance of condemning the modern revisionism represented by the Soviet revisionist renegade bloc.

(5) Resolute Obedience to Proletarian Internationalism, Bitter Condemnation of Two Hegemonic Powers — USA & USSR

A. Internationalism is a requisite condition for attaining a complete liberation of the proletariat.

B. The two hegemonic powers, the United States and the Soviet Union, are the common enemies of the people of the whole world. Soviet revisionist social-imperialism is a most dangerous enemy. We must realize the tremendous significance of forming an international united front against hegemonism.

This general outline of matriculation is in reality a militant outline that highlights the regime's continued adherence to violent revolution in spite of the ending of the "cultural revo-

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lution." It fully indicates at the same time the regime's unchanging policy of regarding the United States as a "potential enemy," irrespective of the establishment of Washington-Peiping diplomatic relations. We notice also in the general outline a redoubled effort of the regime's leadership core to form an international united front against hegemonism.

In July 1979, the State Planning Commission of the State council, in a "Report on the Question of Job Assignments of Graduates of Higher Educational Institutions of A General Nature," brought this to light: "The number of students in higher educational institutions of a general nature in 1979 including those postponing the date of their graduation until 1980 amounts to a total of 162,000. These students were recruited on a selective basis in 1976. They came from the worker-peasant-soldier families and were for the most part league or party members. In giving job assignments to these university graduates, we must continue to stick firmly to a principle of sending them to work in industrial and mining areas, in rural areas, in grassroots units, in border regions, all for reinforcement of the first line of production. The university graduates may be sent to work in units of the whole-people ownership system or in units of the collective ownership system. Nevertheless, regardless of where they are assigned to and irrespective of what type of work they are doing, we must pay them as university graduates, and the personnel departments should treat them as cadres of the state." (19)

Many of the university graduates assigned to "good units" in cities and municipalities have often turned out to be inefficient and incapable of carrying on their jobs. From 1973 to 1978, for instance, 342 university graduates of the worker-peasant-soldier origin were assigned to scientific and research offices of the Changchun branch of the China Academy of Sciences, but only a small number of them performed their work satisfactorily. A vast majority of them could not do their work well, because they were found to be inefficient, incapable, and of a low professional skill. They did not know how to use laboratory equipment properly, or how to research data from documentary papers. They also lagged far behind others in their knowledge of scientific theory. It is not surprising, therefore, that the university graduates of worker-peasant-soldier origin are now becoming a target of discrimination. (20)

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Changes in the Higher Educational Institutions since the Cultural Revolution

In all the years of the "cultural revolution" the educational system of the earlier pre-1965 period was branded as "bourgeois education," centering on bourgeois teaching methods, on bourgeois books and teachers, on bourgeois bookish knowledge and formulas and theories running counter to reality. A new educational process was set forth to replace the old one.

An ultimate result of the implementation of this "new relationship" was a general decline in the quality of teaching and in the efficiency of teachers. The contents of curricula were sharply reduced, and they were of inferior quality too. School textbooks and teaching materials were destitute of educational contents. The methods of teaching were fantastic and ridiculous.

After the ending of the "cultural revolution," a specific emphasis was placed on "securing an effective control over the laws of teaching" as well as on "raising the effectiveness of teaching" at the time of the "reform" of higher education.

On March 18, 1978, at a National Conference of Sciences, Chairman of the State Scientific and Technological Commission Fan Yi pointed this out: "In the National Programme for Scientific and Technological Development in 1978-85 (Draft) we have set forth four objectives of struggle to be achieved in scientific and technological work within eight years. The four objectives are: (1) in respect of the important domain of science and technology we must strive to come close to or reach the advanced scientific and technological level of the world. (2) We must strive to build up a professional scientific research force of 800,000 men. (3) We must possess a number of modernized bases for scientific experimentation. (4) We must set up a mainlandwide scientific and technological research system."(21)

The four objectives listed in the 1978-85 national programme for the development of science and technology have however encountered setbacks and resistances, because of the following factors.

The first factor is that the various scientific research organizations have continued to function like "asylums for aging and ailing cadres." Reporters of the NCNA recently visiting a number of the scientific research organizations were shocked to discover the number of old, weak and sick cadres holding positions of influence and leadership. Supervisory organs at

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the top have assigned large numbers of aging and ailing cadres to the scientific research organizations in the name of taking care of their livelihood. There is then little wonder that the ultimate result has been the transformation of many scientific research organizations into "asylums for aging and ailing cadres." (22)

The second factor is the existence of a mutual discrimination and dislocation between scientific education and scientific research in the higher educational institutions.

In terms of the system of education, the regime had set forth in 1958 an advocacy calling for establishment of a new three-in-one system of education combining "teaching work" and "scientific research work" and "production work" into one entity. Now, in spite of the establishment of a new pattern of "two centers" in higher educational institutions which does not mention "production work" as an element of higher education, the basic aim of education as a whole remains unchanged, for it still lays a strong emphasis on the integration of "production work" with "educational work."

Therefore, as long as it remains mandatory and compulsory to have "educational work" and "production work" integrated into one entity, the prospects for the development of scientific education and scientific research are not bright. Chien San-chiang, a renowned Chinese mainland scientist, told a Yugoslav newspaper reporter that "the level of the scientific development on mainland China lags 10 to 20 years behind the average level of scientific development of the world." (23)

While the current regime is redoubling its efforts to step up scientific research and development, the real obstacle lies in political and ideological interference in the educational system and in the disturbance caused by compulsory participation in manual work. These problems will not be remedied by cultural and scientific-ideological exchanges with foreign countries. While these conditions persist the idea of catching up with the scientific and technological level of the advanced countries of the world will remain only a political slogan that has no chance of becoming a reality.

Policy of Sending Students to Foreign Countries for Advanced Education since Cultural Revolution

The regime's policy of sending students to foreign countries

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for advanced education, which was discontinued in the years of the "cultural revolution," but which is today being gradually restored and expanded, has always been tailored to meet the needs of the four-modernization program and the possibilities of the outbreak of a world war. It is a policy simultaneously possessing two basic concepts – the import from foreign countries of scientific and technological knowledge, and the export to foreign countries of communist ideological concepts.

According to a NCNA report dated January 3, 1979, 480 students were sent by order of the regime to 28 countries for advanced education in 1979. The 28 countries were: Belgium, Bengal, Canada, Denmark, Egypt, France, West Germany, Greece, India, Iran, Iraq, Italy, Japan, North Korea, Laos, Malta, Mexico, New Zealand, Pakistan, Poland, Rumania, Sri Lanka (Ceylon), Sudan, Switzerland, Syria, the United Kingdom, the United States, and Yugoslavia. Among the 480 students sent out for advanced education were deputy researchers, lecturers of universities, engineers, medical doctors, college students, graduates of secondary schools, researchers and translators working in scientific research units of the various ministries and commissions under the direct supervision of the State Council. Aged from 20 to 45, these students were sent out to study in the graduate schools or the scientific research institutions of foreign countries for a period of two or three years. The major courses of their studies were sciences, engineering, agriculture, medicine, economics, education, and foreign languages (English, French, German, Japanese, Spanish and Arabic languages). Not all overseas countries have responded favorably.

United States:

The first Chinese mainland students arrived in the United States in 1978, when a small group of six scientific researchers, five men and one woman, aged 36 to 44, arrived at Stanford University for a two-year study of science and technology. (24) Further students, mostly middle-aged, have since entered other American universities (25) and an American government official has stated that all university courses open to American students, such as science, engineering, agriculture, and economics, could be available also to students from the Chinese mainland. The

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only exception was research work on national defense. (26)

Japan:

There are at present 200 students from mainland China studying in Japan at their own expense. The major courses of their studies are mining and metallurgical engineering, electrical engineering, architectural engineering, and chemical engineering. In 1979, it was officially decided that 500 students were to be sent to Japan for advanced education. The prime minister of Japan responded warmly to the decision. According to reports, a group of Japanese business and cultural leaders had planned to build in Tokyo a 10-story building, "Japan-China Friendship Building." (27)

United Kingdom:

According to a London report dated October 6, 1978, when the British minister of education visited Peiping in July of that year, he was asked to consider a plan for expansion of Chinese Communist educational projects in the United Kingdom. In the plan the British minister was requested to accept 1,000 students from mainland China for advanced education in the United Kingdom. London has ultimately agreed to set up in Peiping a "government office" for the implementation of the Chinese Communist proposal for the establishment of an English language education center in Peping or Shanghai.

France:

In September 1978, a French delegation visited the Chinese mainland for a discussion of the question of starting preparatory work for acceptance of students in France for advanced education. Towards the end of September of that year, 50 students were in Paris to receive an education of three to five years. Under the arrangements of the French Ministry of Education and the Chinese Communist Embassy, the students were accommodated with French families. In the first year of education in France they studied the French language and tried to accommodate themselves to the new mode of life in a foreign territory. Then, in the second year, they started their study of physics, chemistry, mining and metallurgical engineering, petroleum prospecting and exploration, electronic communications, or factory management.

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West Germany:

On October 9, 1978, the West German Minister of Science and Technology assured Vice Premier of the State Council Fang Yi of full scientific and technological support to help mainland China achieve an economic modernization. The minister and the vice premier signed a scientific and technological cooperation agreement, in which they agreed to increase the exchanges of scientific and technological personnel and to establish direct contacts between the academic institutions of both sides. There was, however, no agreement reached on the number of students to be sent to West Germany for advanced education.

Reports from West Germany indicated at the time that this European country had responded with great caution to the question of stepping up scientific and technological cooperation between both sides, because it was reluctant to incur Soviet displeasure, but that West Germany was considering the establishment on mainland China of a "special testing center" in order to make sure that the students coming from China Mainland to West Germany for advanced education could meet the German basic requirements. On December 10, 1978, a commercial newspaper in West Germany pointed out that the regime on mainland China planned to send 420 students to West Germany for advanced education, but a major difficulty was the regime's lack of definite concepts on questions involving courses of study, language, expenses, boarding of students, etc.

In the light of the above survey, we come to the understanding that the regime's prevailing policy of sending students to foreign countries for advanced education has had three distinctive features which are worthy of our attention.

First Feature: Whereas in the years preceding the Moscow-Peiping conflict in party and state relations there were 14,000 students (including mechanics and technicians) from China Mainland studying science and technology and culture in the Soviet Union, there is today not a single student or mechanic receiving education or training in the USSR.

Second Feature: The Peking government has decided to replace lost USSR facilities by training in the universities of the capitalist countries.

Third Feature: 20,000 students are scheduled to be sent from the Chinese mainland to foreign countries for advanced edu-

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cation in each year. Of these 1,000 would go to the United States and another 1,000 to Japan. The government of Japan had expressed the view, however, that it could increase this to 2,000 students. (28) The destination of the other students include a wide variety of western and third world countries.

Possible Impact of Foreign Education Students

Alain Jacob, correspondent of French Le Monde newspaper in Peiping, wrote in report dated August 21, 1978: "After living and studying a couple of years in the advanced countries of Europe and America, the outstanding students from China Mainland would learn much of the distinctive features of European and American science and technology, but they would also recognize the atrocities of the mainland China regime and its previous deceptive propaganda schemes slandering and vulgarizing the western countries. This could possibly result in an awakening of these educated young people, in a continual defection of them to the camp of freedom, and in the birth of a powerful overseas anti-communist force."

In a frank dialogue with an overseas Chinese leader visiting China Mainland Teng Hsiao-ping said: "We knew a long time ago that defection of students in foreign countries was inevitable. We don't mind that, even if 50 percent of our students should sneak out to ask for political asylum." (29)

A most explosive problem is perhaps the far-reaching influences of the foreign-educated students when they return to mainland China after completion of their overseas education. A professor of political science in the United States predicted: "The sending from China Mainland of thousands of university students to foreign countries for advanced education is like the installation of a time-bomb that may blow up years later and destroy the Chinese Communist systems. After staying and studying three to five years in foreign countries, these university students will have views differing basically from those of the elderly people. A conflict between two generations of people arising from differences of opinion on the concept of value and other things, could flare up at any time. And it could be a very grave one." (30)

However, other evidence indicates that the Chinese communist students stay together as a close community while at overseas universities, and consequently remain largely isolated from local influences.

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Conclusion – Development of Higher Education

The reform of higher education on mainland China has been going on for 10 and more years since the launching of the "cultural revolution" in 1966. After going through twists and turns, the reform has come back today to where it had started out a decade ago. Now with the "four modernizations" policy emphasizing the need for education and scientific-technological development, a reform of higher education has again become imperative, but it is facing a series of realistic and historic problems which are difficult to remedy because of the "after-shocks" of the disastrous "cultural revolution."

To push forward its "four-modernizations," the regime on mainland China is currently redoubling its efforts to improve higher education both quantatively and qualitatively, but it faces the following severe problems:

On the question of quantitative increases, we see that the economic reconstruction of mainland China is at present still going through an adjustment, and in the course of this adjustment two negative factors are brought up for attention. One is shortage of foreign exchange reserves for payment of scientific and technological equipment purchased from foreign countries. The other is magnification of a huge surplus labour force arising from implementation of the "four-modernizations."

As is known, the present increases in the huge labour force of mainland China have far surpassed the needs of the prevailing national economic development. In the days to come, there will be greater surpluses in labour force as a result of mechanization that saves a lot of manpower. If the existing population is still not placed under control, unemployment is likely to become more serious and widespread. There are today one billion people living a life of abject poverty in mainland China. At a natural growth rate of one percent, the population increases at 10 million a year, and this is certainly a very heavy burden for a tottering national economy.

Therefore, the regime has loudly declared from time to time that if the high population growth rate goes on multiplying as it is now, the educational funds appropriated by the state could only satisfy the needs of popularization of education, whereas development of higher education would remain impossible, and it would also be very difficult to carry into effect a large-scale upbringing of men of talents. (31)

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On the question of qualitative improvements, the regime has openly admitted this: "our higher education is facing many grave problems – overlapping units, overstaffed offices, low efficiency – which are extremely disadvantageous to attainment of the four-modernization goals. A retrenchment of overlapping units and overstaffed offices is absolutely necessary, because in the higher educational institutions there are so many units and offices to go through in securing approval of a small matter, there are so many educational cadres holding leadership posts but not vested with actual power, there are so many reports to be submitted to men of higher positions, there are so many groups of men laboring day and night on reports and documents, there are endless conferences and forums to attend to for a discussion of big and small matters. This has plunged everybody into unending conferences, unending paper work, and unending rubbish talks. To meet this requirement, it has become inevitable to hire extra secretaries and deputy secretaries. Today, when colleges and universities of quite an impressive number are given the task of cultivating men of talents, they all don't know where to get started, because college teachers are mostly looking for new jobs. If this abnormal situation in higher education is not promptly eliminated, our educational work in colleges and universities will deteriorate." (32)

This is precisely where the shoe pinches most in development of higher education in mainland China. The "four-modernization" means modernization of industry, agriculture, national defense, science and technology. To achieve "four-modernization at an accelerated tempo, the people on China Mainland must set their feet firmly and squarely on the ground and truly get down to work on the political-economic and cultural-educational fronts. Conversely, as we see in *People's Daily*, instead of moving along this line, party and state cadres in local areas are interested not in "four-modernization," but in "four-talks," that is, "big talks," "empty talks," "hypocritical talks," "rubbish talks." There are, for example, some leadership cadres who have remained completely indifferent to a state of long-term backwardness in the work of their own organizations. They find satisfaction in using "four-talks" to cope with their leaders at the top. The men who could successfully apply "four-talks" in the presence of their supervisors are never criticized or repudiated. They win the trust of their leadership organs. And so

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there is little wonder that "four-talks" go on gaining momentum, whereas the "four-modernizations" are daily losing their lustre. (33)

To sum up, it is permissible to say that the development of higher education on mainland China has yet to show any significant degree of progress. Despite nuclear technology, the main body of mainland Chinese society, including the educational system, is not yet ready to respond efficiently to the slogan "four-modernizations" popularized by the post-"cultural revolution" regime in its attempt to make mainland China into a truly viable world power.

FOOTNOTES

(1) *Long Live Mao Tse-Tung Thought*, page 676, an official CCP document for internal study and circulation, published in August 1969.
(2) *People's Daily*, March 29, 1969.
(3) *Revolution in Education*, 12th issue, published July 14, 1967 by the Peking Municipal Liaison Committee for Educational Revolution.
(4) *People's Daily*, March 29, 1969.
(5) *Long Live Mao Tse-Tung Thought*, pages 569-576, an official CCP document for internal study and circulation, published in August 1969.
(6) *People's Daily*, April 24, 1969.
(7) *People's Daily*, November 28, 1967.
(8) *The Orientation of Revolution in Education Should Not Be Changed*, by Mass Criticism & Repudiation Section, Peking University and Tsinghua University, published in *Red Flag*, 12th issue, page 5, 1975.
(9) *Kuangming Daily*, August 2, 1979.
(10) HongKong *Wen Hui Pao*, October 20, 1980.
(11) *Kuanming Daily*, February 8, 1979.
(12) *People's Daily*, June 12, 1978.
(13) *Kuanming Daily*, April 17, 1979.
(14) *People's Daily*, July 25, 1978.
(15) *Kuangming Daily*, May 27, 1979.
(16) *Wen Hui Pao*, July 9, 1979.
(17) *Kuangming Daily*, May 27, 1979.
(18) *Outline of Matriculation for Higher Educational Institutions of the Whole Nations in 1979*, compiled by the Ministry of Education and the People's Educational Publishing House, reprinted in Hongkong *Wen Hui Pao*, April 2, to May 23, 1979.
(19) *People's Daily*, July 4, 1979.
(20) *Kuangming Daily*, July 17, 1979.
(21) *Kuangming Daily*, March 29, 1978.

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(22) Radio Peking, March 29, 1979.
(23) Hongkong *Ta Kung Pao*, January 27, 1978.
(24) Hongkong *Ta Kung Pao*, September 22, and December 8, 1978.
(25) UPI report from Washington, December 22, 1978.
Hongkong *Ta Kung Pao*, December 26-27, 1978.
(26) UPI report from Washington, November 30, 1978.
(27) Tokyo *Japan Times*, October 4, 1978.
(28) Hongkong *Ta Kung Pao*, August 17, & September 21, 1978.
(29) *Young Warrior's Daily*, Taipei, November 7, 1978.
(30) *Central Daily News*, Taipei, October 18, 1978.
(31) Hongkong *Ta Kung Pao*, May 16, 1979.
(32) *Kuangming Daily*, January 5, 1979.
(33) *People's Daily*, November 28, 1978.

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UNDERGROUND HOUSING: NEW LIFE-STYLES IN AN AUSTRALIAN SETTLEMENT

By Sydney A. Baggs

In the past, various types of geospace ('spaces within the earth, manmade or naturally occuring with the earth/rock separating the roof or ceiling from ground surface above [Baggs, 1980 (b)] were used from the time of *Homo erectus* through to *Homo Sapiens* [La Nier, n/d; Labs, 1975]. They took many forms such as that of cavern, pit dwelling, Orcadian and Pict house, fogue, kiva, mandan and cliff dwelling [Breasted, 1935; Clark, 1952]. These shelters meant not only survival through the deadly cold of glacial periods but also freedom to migrate from sub-tropical and tropical into climatically more severe regions during interglacial periods. The stimulus to evolution and culture that arose from a combination of the use of rock-enclosed space with that of manmade fire cannot be over-estimated. For possibly half a million years until modern times, under the stimulus of glacial and interglacial temperature fluctuations, mankind has occupied geospaces that became progenitors of the house, castle, meeting place and church, serving comfort, security, social and magico-religious needs respectively [Baggs, 1973].

In Australia, the underground lifestyle has provided a suitable means of escaping from the climatic extremes of the driest continent in the world. In the 1840s immigrant Cornish miners (using mining techniques) were the first to use terratecture (*terra*: (L) 'earth'), at Burra, South Australia [Baggs, 1978(b)]. Then before the turn of the century, at White Cliffs, New South Wales, and after World War I at Coober Pedy, South Australia, opal miners lived in the cool space of their mines later moving into homes colloquially known as 'dugouts', i.e. lithotectecture (from *lithos*: (Gk) 'stone' and *tekton*: (Gk) 'carpenter or builder') excavated into self-supporting sandstone deposited during the same geological period as the White Cliffs of Dover [*ibid*].

In this century, the needs and desires of contemporary cultures have created such complex demands that unprecedented

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socioeconomic and biophysical pressures have resulted. Two of mankind's most pressing problems, the energy crisis and the fact that the world's housing may have to be doubled by the end of the century (should present demographic trends continue) demand innovative and creative solutions to conserve dwindling energy, land-surface resources and natural environments. In response to these and a variety of other sociopolitical causal factors, terratecture has emerged. This new but in a way very ancient type of architecture requires that a building be constructed within an excavation followed by backfilling to provide a soil and vegetation roof-cover, and includes earth-covered housing as one aspect of a major trend towards the 'undergrounding' of residential, educational, industrial, commercial, transport, defence and recreational facilities, making possible multiple usage of the land. (For illustrations of earth-covered housing *vide* Figure 2).

In terratecture, life-cycle and maintenance costs are said to be lowered by at least 50% [Williams, 1975] and energy savings of 75% or more are claimed [Bligh, 1967] because the thermal inertia effect of the earth-mass surrounding an underground building maintains relatively constant temperature conditions providing a modified soil 'climate' with a much lower amplitude of the annual ground temperature wave, when compared to ambient conditions. Last summer's heat reaches the underground building three to six months later, warming it in winter, while winter's cold is delayed to provide summer cooling [Baggs, 1980 (b)]. These are but a few of the reasons why building underground represents a valid architectural and energy effective design alternative.

However, little was known about user-attitude towards living underground. This lack of data initiated a study that was undertaken in Australia, a portion of which is reported here.

Aim

Inspections of underground housing in the U.S.A. together with an assessment of the various advantages claimed in the literature [Moreland, 1975; Stauffer, 1978; Ugol. Space Center n/d] suggested that the earth-covered dwelling was a suitable housing alternative for arid region communities in the lonely 'outback' of Australia. The question then arose: what would be the attitude of people who already live in this region towards

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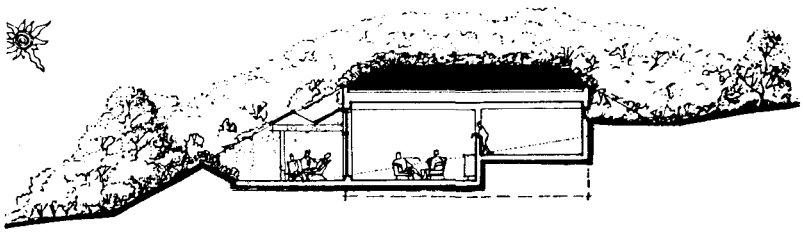
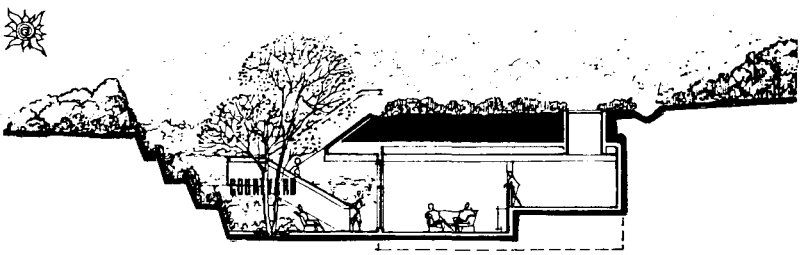
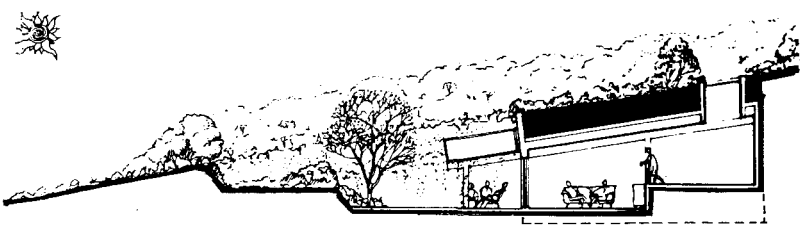


A. EARTH-COVERED AND BERMED ON A NORTH HILL SLOPE



B. EARTH-COVERED WITHIN AN EAST HILL SLOPE OR AN EAST FACING DUNE



C. EARTH-COVERED WITH RECESSED COURTYARD ON NEAR-FLAT LAND

D. EARTH-COVERED CONCRETE SHELL WITHIN A DUNE OR RIDGE

Figure 2: House Designs (to suit Australian Arid Region Terrain) shown to Above and Underground Residents during Survey Conducted in Coober Pedy.

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this type of housing and would they be willing to adopt the underground dwelling as an alternative to conventional above-ground housing. To answer this question, and to explore user attitude before and after occupying an underground dwelling, it was decided to conduct a survey using two methods: a postal survey followed by face-to-face interviews. Both procedures were adopted as approximately one year after the postal survey had been completed a grant was received from The University of New South Wales making possible a visit to the town previously surveyed thereby providing an opportunity to show respondents photographs of modern underground housing [Baggs, 1980 (b)].

Background

As no terratecture existed in Australia, the problem was to identify a population that had adequate knowledge of living underground. However, as the use of lithotecture provided a similar lifestyle, it was not necessary for occupants to have been experienced with terratecture. Further, the population need not have actually experienced underground living, as knowledge of its advantages and disadvantages was sufficient to avoid misunderstanding the concept. It followed that the survey should be conducted in a town where all residents already had either empirical knowledge of, or practical experience with, living underground as only people with these attributes could provide the specific data required.

In the arid region, two long-established opal-mining communities were in existence, both comprising above and underground dwellers. One was the settlement of White Cliffs in New South Wales, population 95 [Aust. Bur. Stats., 1976] where for 100 years a high proportion of residents had lived in dugouts. Because of the small number of residents, this settlement was chosen for pilot testing rather than for the major survey that was undertaken in the larger opal-mining township of Coober Pedy, South Australia (943 km NW of Adelaide) where summer-day temperatures may rise to 60 deg. C. in the sun and winter-night temperatures drop to freezing [Colahan, 1973].

Coober Pedy is located in an area described as Perarid [Gentilli, 1972] with rainfall averaging 141 mm per year [Rainfall Stats. Aust. 1977], hot winds that carry dust into every corner of the above-ground houses and daily relative humidity readings

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around 20% [Clim. Av. Aust., 1975]; such an environment imposes great hardships upon the residents of this 'frontier' town located in a bleak desert of mulga and saltbush where the low mesa tabelands of the 'breakaway' country provide the only visual relief.

At the time of the 1976 Commonwealth Census, the remote community of Coober Pedy, established for over 60 years, with a population of 1 903 [Aust.Bur.Stat., 1976] seasonally rising to 4-5 000, had approximately half its population living underground. From earlier interviews in White Cliffs, and considering the rapid growth of the underground housing industry in the United States [Ugd.Space Center, n/d], sufficient evidence existed to suggest that some Coober Pedy residents, with experience and/or knowledge of underground living, when given the choice of living in either modern above-ground or earth-covered housing, may choose to live underground.

When age and length of residence were subsequently checked it was found that none of the respondents had been born in the town. It followed then that all had previously lived above-ground and upon moving to Coober Pedy, each subject had the apparent choice of living above or below ground. It was a considerable disadvantage not to have visited the town at the pre-test stage as incorrect assumptions were made that all residents could select their current mode of living. However, it was later revealed that approximately half of those who currently lived above-ground would have preferred to (but could not) live underground as no land suitable for dugout excavation remained within the 'town square mile' where certain advantages (that included the supply of electricity) were available to residents.

From these three categories of Coober Pedy residents, above and below ground dwellers and those who wanted to (but could not) live underground, opinions were sought concerning preference for living in modern underground housing. This population was therefore seen as being representative of people in general who, living in Australia and with a background of living previously in different types of dwellings, and having gained experience and/or knowledge of living conditions (involving housing, climate and socioeconomic factors) had for reasons of their own chosen one of the two lifestyles available to them, i.e. in either above or below ground dwellings.

At the time the surveys were undertaken no research work on

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attitude to living underground could be located. In the literature, there was little useful information on the dwelling types or the community of Coober Pedy. A few popular magazines and books together with government census statistics were the only sources of information available.

Certain aspects of studies into varying degrees of environmental stimuli [Berlyne *et al*, 1963; Fiske, 1961], absence of windows [Collins, 1975; Collins, 1978], all with reference to accompanying stress reactions [Levitt, 1968; Selye, 1956; Selye, 1959], had some bearing on the subject although research into windowless living space was not considered in its broader aspects as (a) work on the subject is inconclusive [Lutz, 1964], (b) most contemporary residential terratecture has windows, and (c) no illustrations of houses without windows were displayed during surveys.

During early stages of the research, cross-cultural influences and socioeconomic status seemed to be associated with negative attitude to living underground and this required investigation. Possible cross-cultural influences were to be explored by establishing the country of origin of a subject and comparing this with attitude to living underground. Negative attitudes influenced by fear or anxiety associated with, for example, entombment, enclosed spaces, and dirt or darkness, although interesting in themselves, were not included as subjects for research. Finally, architectural data on certain design factors common to dugouts and modern underground housing that had application to the design of terratecture were to be gathered. (These factors that influenced thermal efficiency were mainly concerned with ventilation and air movement). A preliminary questionnaire was designed and implemented in White Cliffs. (*vide* Appendix B, for one respondent's replies to questions asked at the pilot stage).

One other problem remained: the question of whether people with experience and/or knowledge of lithotecture could make judgments about terratecture. During casual conversations in Sydney, the question 'would you be willing to live in a modern underground house' was asked. Certain people while answering in the negative, made comments about being 'buried', 'six feet under', living in 'caves', and in 'dirty and dark', 'wet and cold' conditions. However, others accepted the idea immediately and enthusiastically while some, confused about the concept, were

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unable to answer.

Yet when photographs of modern underground housing were shown to those who had answered in the negative and those who were confused about the concept, many changed their attitudes and their answers. However the attitude of a small proportion remained unchanged. Generally, as the proportion of people who did change their opinion far outweighed those who did not, it became clear that questions about living in modern underground housing could not be asked without showing photographs of such housing when and if respondents were confused or answered in the negative. Obviously it had not been possible to display these graphics when the appropriate question arose during the postal survey. This was one of the main reasons for conducting a direct survey once funds became available.

Articles published in magazines on the subject of Coober Pedy, gave a somewhat daunting picture of a population containing over 50 nationalities. Consequently, language difficulties were anticipated and these prognosticated limited success for the survey unless simple syntax was used in the questionnaire. Because of these difficulties, and financial limitations, it was decided to avoid assessment procedures that used rating scales and both questions and response choices were kept as simple as possible. Although there were only 4.6% non-English speaking residents in the community, 34.6% were recorded as having 'English and one other language' [Aust.Bur.Stats., 1976]. Interviewers subsequently found the actual level of English language skill possessed by some respondents to be very poor.

Questions:

Questions were developed in connection with each area of enquiry as follows:

Demographic characteristics
Attitude to aboveground housing
Experience with living underground.
Status symbols and current accommodation (standard and features)
Attitude to living in modern underground housing

Questionnaire:

The postal survey questionnaire used for Survey 1a, was

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reused as an interview schedule. The resultant interview survey (referred to as 1b) was administered by one male and one female interviewer, and enabled the previously-mentioned photographs to be shown where relevant.

Sample

For convenience, respondents in the Coober Pedy population sample were classified as 'subjects' (Ss). This sample was divided into above-ground and underground Ss.

When approached, the South Australian State Government Department of Mines and Energy kindly supplied a list comprising names and addresses of lessees/owners. No additional information about the prospective respondents was available. Survey questionnaires were posted to 440 Coober Pedy residents. The Post Office returned 30% of the envelopes as undeliverable for various reasons, e.g. 'no longer in Coober Pedy', 28% returns were received completed, while 42% of addressees did not reply.

A total of 141 surveys comprising 51 above and 90 underground Ss completed the revised version of the questionnaire. This was made up of 88 indirect survey responses (58 underground Ss, 30 above-ground Ss) and 53 direct responses obtained by interview (32 underground Ss, 21 above-ground Ss). Only 18 females completed surveys and of the 90 underground Ss, 81 were under 55 and 9 were over 55 years of age. Above-ground Ss were not asked their age and were far more reluctant to be interviewed than underground Ss. Of 81 above-ground Ss who were approached, it was only possible to interview 21 (26%) of them; of the 32 underground Ss approached, all agreed to be interviewed (100%). Whenever it was necessary to compare underground Ss and above-ground Ss, the sample of underground Ss was reduced from 90 to 51 using random number tables. This permitted equal numbers of both types of Ss to be compared, reducing the total from 141 to 102. However, comparisons made within each sub-population of underground Ss and above-ground Ss utilized the unreduced numbers.

Sampling Procedure

Quota sampling procedure was followed and the interviewers were instructed to obtain interviews with equal numbers of above and below-ground subjects. However, a disproportionate amount of time was spent in the field trying to equalize the

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numbers of above-ground Ss and underground Ss. Despite the efforts made, it was not possible to achieve this.

Random or systematic sampling from the lists supplied was not a practical procedure. Direct interviews were conducted by initially approaching the area of major density of above-ground housing and then working from the centre of the town outwards towards dugout areas.

The direct survey was conducted at a time of the year, when unbearable conditions prevailed with daily temperature maxima ranging from 40-46 deg.C. and dust storms blowing for half the survey period. Interviews took place inside the homes of respondents. Because miners generally worked at night, and as the surface machinery upon which they were dependent (whether they were working open-cut or subsurface mines) would overheat during the day, they were available for interviews during the day in the presence of their families; male Ss generally answered the questions.

Many of the Ss interviewed had received (but not returned) the mailed questionnaire. The attitude of most underground Ss was open and expectant. Interviewers reported that even before the purpose of the survey was stated, a distinct difference existed between above and underground Ss in their attitude. A large proportion of above-ground Ss were suspicious, several stating they thought the interviewer was a taxation official. Amongst those Ss who refused to be interviewed there were those who were unexpectedly aggressive and occasionally abusive, those who slammed doors without speaking, and others who did not answer the doorknock (although music could be heard from within). Some even shouted through closed doors: 'go away!' Those who refused to give their names (even though the confidentiality of the information was stressed) were above-ground Ss. In contrast most underground Ss were eager to answer the questions and talk about living underground.

The interviewers were not subjected to the usual influences that could have predisposed them to bias as they were strangers to the town. Dugouts visited had few external indicators of socioeconomic status to bias selection. The appearance of the above-ground houses were mostly similar to those found in suburban situations throughout Australia, the main difference being that, in some locations, galvanized iron sheds and caravans were used as dwellings. Interviewers reported that the almost

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unbearable conditions of heat and dust, presence of savage guard dogs, and residents carrying guns in outlying locations were deterrents and caused some difficulties.

Results and Discussion Surveys 1a, 1b

For reasons outlined below, the data from both surveys were processed in combination and analyses were conducted using chi-square and Fisher Exact tests to determine the significance of the relationships between certain independent variables, after the relevant data were expressed in terms of frequency of joint occurrence.

With the exception of several questions, when photographs were shown during the direct survey, there were no obvious differences between Surveys 1a and 1b. Responses of above-ground Ss and underground Ss were so alike, each to each, from Survey 1a to 1b that no differences could be detected in the information supplied once it had been presented in typewritten form. Consequently the results of both Surveys were amalgamated and processed together. Apart from the similarities in answers from question to question, the interviewers had been instructed to record all unsolicited comments on the relevant survey forms. As a result, the completed direct survey forms of underground Ss generally included many such comments, as had the postal survey forms, while those of above-ground Ss contained no unsolicited comments (with the exception of one married couple who somehow obtained an additional postal questionnaire and returned two surveys, both with derogatory remarks about 'undergrounders' and their lifestyle).

In the discussion that follows, where possible, all proportions have been rounded off to the nearest 1%, however, where necessary, actual counts are also used. After the answers to the question: 'if it was possible to live in a modern underground house of equivalent accommodation and standard to your present home, how would you feel about the idea ?' had been processed, it was possible to further subdivide above-ground Ss into two categories as follows:

If such above-ground Ss answered 'yes' to the question they were further classified as 'above-ground Ss with a positive attitude to living underground' (above-ground + Ss). If they answered 'no', they were classified as 'above-ground Ss with a negative attitude to living underground' (above-ground –Ss).

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Attitude to living in modern underground housing was explored at the beginning of the survey by asking all Ss how they felt about the idea. The responses of above-ground Ss were cross-checked at the end of the survey by asking: 'if it was possible, would you live in a modern underground house of equivalent accommodation and standard to your present home?'. Underground Ss were asked: 'if you could move to another house in this town, and if it was of the same standard and accommodation as your dugout, would you or any of the persons who live with you prefer to live in an above-ground house?'.

It was anticipated that some of the factors influencing attitude to living in underground housing could be isolated. Therefore questions were asked of above-ground Ss that would identify possible status indicators as advice had been given in advance not to enquire about income level as residents would be reluctant to reveal such information. These were: 'do you have air-conditioning . . . insulation in ceilings and walls . . . how many rooms in your house?' and of what materials 'are the walls and roof of your home constructed?'.

Also, possible cross-cultural bias was explored by establishing the nationality of Ss and testing for a relationship with attitude to living underground. Occupation (classified as blue or white-collar worker in accordance with type of occupation, e.g. miner or company director respectively), length of time of occupation of dwelling, whether Ss lived above or below ground, and age were also sought.

Further questions were asked of underground Ss to establish whether pre or post occupancy was accompanied by state anxiety: 'have you ever lived in a dugout or underground dwelling before moving into your present home? Another question asked for information on the types of dwellings previously occupied, and also: 'now you are living in your dugout, do you feel more secure/just as secure/less secure?' Ss were also asked 'before moving into your dugout, how did you feel about the idea of living beneath the ground? (pleased/unconcerned/anxious), and: 'now you are living in your dugout, do you feel (pleased/unconcerned/anxious) about living beneath the ground?" The main issue pursued was whether Ss would or would not live in a modern underground house. All 90 underground Ss and 25 of the above-ground Ss answered in the affir-

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mative and 26 above-ground Ss answered in the negative.

In Table 1, (*vide* Appendix B. p. 30) the relationship between the variables: live in modern underground housing (live/not live) and current mode of living (above/underground) was tested for independence and found to be significantly related ($p<0.05$ chi-square), Ss currently living below-ground were more likely to answer they were willing to live in modern underground housing than those currently occupying above-ground houses. In the reduced sample of 102 (equal numbers of both types of Ss), proportionally, 100% of all underground Ss and 49% above-ground Ss (i.e. above-ground + Ss) would live in modern underground housing while 51% of all above-ground Ss (i.e. above-ground −Ss) would not. In all, 26% of the reduced sample would not live in modern underground housing and 74% would.

TABLE 1

** For U.Ss and A.Ss, (Sample 102), Frequencies Relating Present Mode of Living to Attitude to Living in Underground Housing.

		(Q.4) Present mode of living		
		Above-ground house	Underground dugout	
Live in modern underground housing. (Q.2)	Yes	25 (38.0) * A+Ss [24.5%]⊕	51 (38.0) [50.0%]	76 [74.5%]
	No	26 (13.0) A-Ss [25.5%]	0 (13.0) [0.0%]	26 [25.5%]
		51 [50.0%]	51 [50.0%]	102 [100.0%]

** Number of U.Ss randomly reduced to equalise the number of A.Ss (51)
Chi-square = 34.89
* Fe shown thus ( ). ⊕ Proportions related to total sample [%].

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Expressed attitudes and opinions from both above-ground Ss and underground Ss are best conveyed by quoting selectively from completed surveys; these comments were given by Ss in relation to attitude to living underground. The following are selected, typical underground and above-ground + Ss' comments indicating positive attitude to living underground, grouped into various categories of responses:

Category	Comments
a. Physiological comfort	'Coolest, warmest, quietest, living conditions unbelievable', temperature stays almost stable all year round'.
b. Functional	'Completely free from flies and other insects, rooms never smoky or smelly due to the ventilation', 'less housework, less maintenance, no dust'.
c. Privacy and security	'Privacy, lack of awareness of outside happenings', 'underground, I feel much more safe, so much safer than in a conventional house'.
d. Environmental	'More in tune with the environment, better expression of personal needs and wants'.
e. Aesthetic and creativity	'The soft light inside makes it more aesthetic, intimate and friendly', 'the individualistic style appeals to me'.
f. Health	'No dust, therefore no allergies', 'sleep deeply and long'.
g. Economic	'Cheaper to live in, no air conditioning needed, no heating'.

The following are selected and typical opinions expressed by above-ground Ss indicating negative attitude to living underground, also grouped into various categories of responses:

Category	Comments
a. Status	'It's only for poor miners'.
b. Reality based fears	'The roof might cave-in'.
c. Negative associations	'Reminds me of a bunker I once knew'.

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d. Extreme anxiety	'I get claustrophobic underground'.
e. Health	'Continental people have a preconceived notion that dugouts are damp and unhealthy'.
f. Reduced stimulation from the macroenvironment:	
(i) Social	'I can't see people'
(ii) Sensory	'Above-ground you can see cars move', Underground there's no contrast', 'less air', 'no sun'.

Some of the criticisms expressed by above-ground Ss concerning the reduced sensory stimulation from the outside environment they thought existed in underground dwellings, were interesting, as 90% of all above-ground Ss closed all their curtains, windows, blinds and doors in hot, dusty weather that continued unabated for months. By closing down the apertures through which stimulation from the outside environment was obtained, these above-ground Ss had created interior conditions similar to those that they criticized in underground housing. However underground Ss had no need for heavy curtains and blinds and were thereby comparatively advantaged in this respect.

Variables Influencing Attitude to Living in Underground Housing

From the pre-test interviews at White Cliffs, certain variables appeared to influence the attitude of some Ss towards living in underground housing. Briefly the factors that were investigated were:

(1) Status and/or conservatism: (A) in above-ground Ss, and
(B) in underground Ss.

(2) Cross-cultural influences with specific reference to:
(A) nationality and
(B) occupation status.

(3) Previous experience with living underground as affecting attitude in terms of anxiety with specific reference to:
(A) security and
(B) privacy.

(1) Status and/or conservatism

It was thought that living in a large, brick house may be a cue

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to either conservatism or socioeconomic status, and therefore connected with negative attitude to living in underground housing as what may be termed a conventional attitude to above-ground housing had been demonstrated in 18% of the sample.

It was found that ownership of a brick house with four or more rooms, air-conditioning and insulation in the roof all separately appeared to have borne some relationship to the decision of above-ground Ss to live in above-ground housing. All these variables were considered in combination in Table 2 (*vide* Appendix B, p. 31). White-collar workers were more likely to own a brick house with the previously-mentioned attributes than were blue-collar workers ($p<0.05$ Fisher Exact test).

(2) Cross-cultural influence with specific reference to

(A) Nationality (as a cross-cultural variable):

Table 3 following indicates nationality tabulated against attitude to living in modern underground housing.

From Table 3, it may be seen that Australians had the highest proportion of all national groups (90%) who would live in modern underground housing and British nationality was next (86%). Greeks and Italians preferred to live above-ground. As the sample of 'other national groups' comprised 23 different nationalities, further analysis would not have been meaningful.

It was decided to test whether national origin could be a determinant of attitude to living in underground housing.

The following nationalities were tabulated against attitude to living in modern underground housing (would or would not live in such housing): a. Australian (Australian/non-Australian) b. United Kingdom (British/Australian) Greek (Greek/Australian) and d. Italian (Italian/Australian).

From Table 4 (*vide* Appendix B, p. 31) it can be seen that Australian above-ground Ss were more likely than non-Australians to answer that they would live in modern underground housing ($p<0.05$ chi-square test). Out of 51 above-ground Ss, 49% would live in underground housing, and of these, 18% were Australians. Out of the sample of 12 Australian above-ground Ss, nine would live in such housing. Of the British subjects, six out of seven answered in the affirmative (Table 7 p. 33). This test for above-ground Ss was extended to encompass all Ss. Out of a total of 102 Ss, 76% would live in underground housing and

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TABLE 2

For A.Ss, Frequencies relating Occupation to the Ownership of a Brick House with Air-conditioning, Roof Insulation, and four or more Rooms.

		(Q.31,32,34, 38) Ownership of Brick House with air-conditioning, roof insulation and more than 4 rooms.		
		Yes	No	
Occupation of Ss (Q.on Face Sheet of Survey)	White-collar	4 (1.0) * [7.8%] +	6 (9.0) [11.8%]	10 [19.6%]
	Blue-collar	1 (4.0)) [2.0%]	40 (37.0) [78.4%]	41 [80.4%]
		5 [9.8%]	46 [90.2%]	51 [100.0%]

Fisher exact test p = 0.004
* Fe thus ( ) + Proportions related to total sample thus [%]

TABLE 3

For All Ss, Nationality Tabulated against Attitude to Living (live/not live) in Modern Underground Housing

	Aust.	Greek	Italian	U.K. (Brit.)	Other	Total
Underground and above-ground +Ss who would live in modern ugd. housing	45 [31.9%]*	6 [4.3%]	3 [2.1%]	6 [4.3%]	5 [39.0%]	115 [81.6%]
Above-ground -Ss who would not live in modern ugd. housing	5 [3.5%]	10 [7.1%]	4 [2.8%]	1 [0.7%]	6 [4.3%]	26 [18.4%]
	50 [35.4%]	16 [11.4%]	7 [4.9%]	7 [4.9%]	61 [43.4%]	141 [100%]

*Proportions related to total sample shown thus [%];

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TABLE 4

For Australian Ss, (Sample 102) Frequencies relating Nationality to Attitude to Living in Modern Underground Housing

		(Q.3) Nationality		
		Australian	Non-Australian	
Live in modern underground housing. (Q.2 and Q.39)	Yes	36 (27.5) * [35.3%] ⊕	40 (48.4) [39.2%]	76 [74.5%]
	No	4 (9.5) [3.9%]	22 (16.6) [21.6%]	26 [25.5%]
		40 [39.2%]	62 [60.8%]	102 [100.0%]

Chi-square = 8.31
* Fe shown thus ( ) ⊕ Proportions related to total sample thus [%]

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of these 35% were Australian (comprising 90% of the Australians in the sample). When similar tests were conducted on other nationalities, Ss of Greek and Italian nationality were more likely than Australian Ss to answer in the negative. ($p<0.05$ Fisher Exact test, Tables 5 and 6)

Typical comments from an Italian and a Greek made at an early stage of research are given below as they appear to epitomize the relevant attitudes:

> Italians wouldn't hide their houses underground, they want to show everyone what they've got. They want their home to be bigger and better than everyone else's, that's why they have marble staircases and ornate furniture. You've only got to look around any suburb, you can pick the houses of Italians.
>
> Greeks wouldn't build underground houses. They wouldn't have enough status. They wouldn't be prestigious enough.

(3) Previous experience with living underground affecting attitude in terms of anxiety and with specific reference to (A). security and (B). privacy.

It was thought from observations during pre-test interviews that anxiety should be investigated as a variable possibly influencing attitude towards making the decision to move into an underground dwelling, and to living underground. The possibility was considered that factors such as anticipation of occupying an underground dwelling, real or imagined threats to security arising from the unique environment of Coober Pedy, or a desire for, or threat to privacy could be operating to influence attitude.

A self-evaluative report was sought from all underground Ss concerning the level of anxiety that they experienced at the time when they initially anticipated moving into an underground dwelling. To develop some idea of whether or not a change may have occurred in the level of anxiety after occupation of the underground dwelling, several questions were asked that were retrospective. These referred to the period prior to occupation.

Of the sample of 90 underground Ss, while 88% were non-anxious, about 12% had felt anxious prior to occupying a dugout. Despite the fact that 31% of all respondents had prior experience with living underground before moving to their present dugout dwelling, 25% of these still experienced feelings of pre-anxiety about moving into a dugout. Of the 69% with no

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TABLE 5

For All Greek and Australian Ss in total sample 141,
Frequencies relating Nationality to
Living in Modern Underground Housing

		(Q.3) Nationality		
		Greek	Australian	
Live in modern underground housing. (Q.2 and Q.39)	Yes	6 (12.4) * [9.1%]	45 (38.6) [68.2%]	51 [77.3%]
	No	10 (3.6) [15.2%]	5 (11.4) [7.5%]	15 [22.7%]
		16 [24.3%]	50 [75.7%]	66 [100.0%]

Fisher Exact test p = 0.001
* Fe shown thus ( ), + Proportions related to total sample shown [%]

TABLE 6

For All Italian and Australian Ss in total sample 141,
Frequencies relating Nationality to
Living in Modern Underground Housing

		(Q.3) Nationality		
		Italian	Australian	
Live in modern underground housing. (Q.2 and Q.39)	Yes	3 (5.9) * [5.3%] ⊕	45 (42.1) [78.9%]	48 [84.2%]
	No	4 (1.1) [7.0%]	5 (7.9) [8.8%]	9 [15.8%]
		7 [12.3%]	50 [87.7%]	57 [100.0%]

Fisher Exact test p = 0.01
* Fe shown thus ( ), ⊕ Proportions related to total sample shown [%]

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TABLE 7

For All British and Australian Ss in total sample 141,
Frequencies relating Nationality to
Living in Modern Underground Housing

		(Q.3) Nationality		
		U.K.	Australian	
Live in modern underground housing. (Q.2 and Q.39)	Yes	6 (6.3) * [10.6%]	45 (44.7) [78.8%]	51 [89.4%]
	No	1 (0.7) [1.8%]	5 (5.3) [8.8%]	6 [10.6%]
		7 [12.4%]	50 [87.6%]	57 [100.0%]

Fisher Exact test p = 0.41
* Fe shown thus ( ), + Proportions related to total sample shown [%]

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previous experience 6% had been anxious. While of the 12% who had felt some degree of pre-anxiety, none reported post-anxiety at the time of the survey. It appeared that the actual occupation and use of an underground dwelling had the effect of reducing anxiety once imagined problems or threats were reality tested.

For 90 underground Ss the variable of previous experience with living underground (yes/no) was tabulated against pre-anxiety in underground Ss related to a contemplated move to their present underground dwelling (in terms of the variable non-anxious/anxious). It was found that the two variables were significantly related ($p<0.05$, Fisher Exact test). Subjects who were not anxious about moving into their dugout being more likely to have had previous experience with living underground, and of those who reported feeling pre-anxiety before moving in, 64% had already experience with living underground.

Of respondents who were older than 55 years, 30% experienced pre-anxiety compared to 10% of respondents under 55 years who experienced pre-anxiety. A review of the profile of each case showed no common factors that could indicate why prior experience and pre-anxiety should have coincided in these particular people, although one factor in common was that none of them had any previous experience with mining. Perhaps this could have contributed to their uncertainty about the safety of lithotecture but this attitude need not necessarily have carried over to influence attitude to modern underground housing that is based upon entirely different construction methods.

Although the data furnished from this survey can only be seen as a preliminary basis for making inferences about pre and post-anxiety, some qualitative assessment may be made. On the basis of self-reports from respondents, it appeared that actual occupation of a dugout dwelling tended to modify anxiety in underground Ss, although prior experience with living underground also appeared to be unrelated to the reduction of anxiety when considering the idea of living in another underground dwelling.

Respondent attitudes towards interviewers in particular and strangers in general could have been indicative of greater anxiety in above-ground Ss than in underground Ss although this was not tested.

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(A). Security

It was thought that an aspect of anxiety that may manifest to some degree as an expressed form of threat to personal safety, i.e. security, could be investigated.

A question was asked to determine the degree of felt security of underground Ss when compared to living in an above-ground dwelling and 56% reported that they felt 'more secure', 44% that they felt 'just as secure'. No underground Ss reported being 'less secure'. Insofar as insecurity may be seen as a correlate of anxiety, this was consistent with the results in which 96% of underground Ss reported no felt anxiety. Respondents who lived in dugout dwellings reported they felt secure from 'burglars', 'Asian opal-buyers', 'tourists' and 'flying tanks' (water storage tanks blown by strong winds).

(B) Privacy

For the unique milieu of Coober Pedy, privacy is discussed here as a correlate of security, as many residents had valuable opals hidden on their premises. This issue was investigated in the question: 'would you like to live in a community of several dugouts all opening off the same courtyard?' Out of 45 underground Ss, 76% mentioned privacy or said 'I like my privacy' as their reason for answering in the negative to this question; 18% of underground Ss said they would like the idea, 82% said they would not.

Conclusion

Climatic determinism appeared to have been the principle motivation for Cooper Pedians (who had long-term knowledge of the underground lifestyle) to live in modern underground housing. Given adequate experience or knowledge of such dwellings, most individuals would accept them as a satisfactory and appropriate alternative to conventional houses. However, the variables of status and cross-cultural bias together with certain psychological factors appeared to influence the degree of acceptance. This may arise from the low social status accorded underground dwellings by some people, from a need for overt socioeconomic status cues, or from the comparatively infrequent occurrence of genuine anxiety, manifested as, for example, a fear of enclosed spaces, death or darkness, etc.

The implications for this research topic are that in areas

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where climatic extremes prevail such as arid or polar regions, a majority of people with knowledge of living underground would be willing to live in modern, high standard earth-covered housing with good conditions of light, ventilation and accommodation.

Should employers wish to introduce underground housing projects, it is suggested photographic displays or audio-visuals of actual development in the United States of America could be shown to potential employees. Those who for good reasons of their own, were not willing to live underground, could be identified by screening procedures during the employment interview. Methods for assessment of the factors involved need to be developed for this purpose.

As the majority of people who said they would live in modern underground housing were of Anglo-Saxon origin (Australasian, U.K.) and those least likely were of Greek and Italian nationality, it may also be useful to generalize (although the uniqueness of the sample in this particular survey makes overseas replication unlikely) that screening procedures should involve identification of applicant's nationality, socioeconomic status in terms of type and standard of dwelling currently occupied, and occupation (blue/white-collar worker). Finally, questions relating to attitude to living underground could be asked.

To those who might consider adopting the underground lifestyle, the following advice may be helpful. It is essential to find an architect who is interested (and in agreement with) the concept of 'undergrounding' buildings. Once such an architect is located (and it may not be easy) the services of a landscape architect with experience in the specific requirements of roof gardens are also required. This expertise is necessary as the technology is beyond the experience of the average house builder. The type of house preferred by a majority of people (for the reasons that 'the courtyard's nice for the kids to play in', 'the deep courtyard's nice in hotter climates', 'daylight' and would be 'cooler' [Baggs, 1980 (b)] is illustrated as 'C' in Fig. 2

The Australian mining industry continues to develop remote sites in areas of extreme climatic conditions, where energy to transport, build, cool and heat is becoming increasingly scarce and expensive. Conservation of energy through the use of

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earth-covered housing may be seen as one alternative energy pathway that may be followed to help ease this economic constraint upon building in the outback. In the eastern states, urban populations are increasing while the availability of useful land tends to be limited to a strip between the Pacific Ocean and the Great Dividing Range. Therefore any planning option that permits dual land-use and the return of open space to recreational use or natural beauty (without preventing buildings from occupying the same land) is of value.

Consequently, underground architecture in general and earth-covered housing in particular has an important role to play in the future.

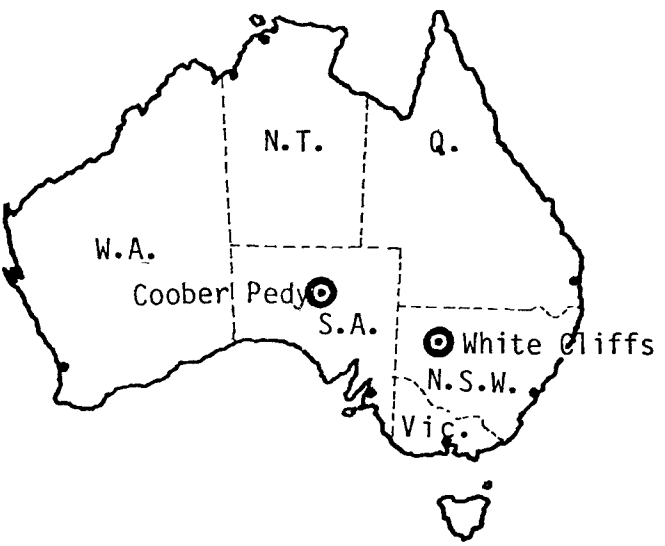

Figure 1: Location Map Australia.

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APPENDIX A

For convenience, the following abbreviations have been used to describe Ss in the Tables presented here.

U.Ss = Underground subjects
A.Ss = Above-ground subjects
All = Total of responses from all U.Ss and all A.Ss
M = Male
F = Female
Q = Question

The following abbreviations (additional to those mentioned above have been adopted:

A+Ss = Subjects who live above-ground and had a positive attitude to living underground by indicating they would live in a modern underground house of equivalent accommodation and standard to their existing home.

A-Ss = Subjects who live above-ground but had a negative attitude to living underground by indicating they would not live underground.

A = Total A+Ss responses and A-Ss responses added together to indicate responses of *all* above-ground Ss.

APPENDIX B

SELECTED EXAMPLE OF QUESTIONS AND ANSWERS AT PRE-TEST STAGE OF SURVEY CONDUCTED IN THE AUSTRALIAN OPAL MINING TOWNSHIP OF WHITE CLIFFS, NEW SOUTH WALES

The following answers to questions at the pre-test stage were typical of the attitudes and opinions of underground dwellers in general. This respondent was a personable schoolteacher who had previously lived in above-ground and temporary dwellings and was able to express herself more fluently than others interviewed. Follow-up correspondence revealed that while living in Victoria for a six-month period in a conventional house, she (and the whole family) 'missed the dugout terribly'. (pte. comm.).

Q. How many people live in your dugout dwelling including yourself?
A. Six – self aged 31, husband aged 31, three girls aged four, six and 20 months and one boy aged eight.
Q. In your dugout, how many rooms do you have?
A. Nine rooms, entrance hall and passages, fossil room, work room, cutting room, pantry, girls' bedroom, boy's bedroom, main bedroom, the study used as a fourth bedroom, kitchen/dining room.

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Q. In your opinion, are there any ways in which you are more comfortable in your dugout than in a comparable aboveground dwelling?
A. My husband has been a miner all his life. He loves it here, feels at home. The kids love the dugout, in bad weather the kids don't even play outside, they just sit in the kitchen and read or colour-in rather than play outside when it is hot or cold or windy. When we lived aboveground, I had to stay up almost all night in the summer sponging them to cool them down, giving them sips of water continuously, they hardly slept at all as babies, but the 20 month old girl who came into this dugout as a newborn baby has slept like a top right from the start and has been a totally different type of baby to raise because she has always been comfortable and only needed a minimum of clothes. It's been so much easier for me.

I don't have to worry about dust or flies on their bottles. It's so much more convenient. Apart from weevils in rice, which would occur anywhere, we have no vermin at all, food keeps beautifully in our pantry as the temperature's so constant.

I also feel safe, so much safer than in a conventional house, we only use the front door and when that is shut, I know that everyone is safe. Safe from intruders. I'm the sort of person who would look under the bed to check that there wasn't anyone under there, so I really feel happy here in our dugout. Although the cost of living of some things is high out here, because we don't have to spend on other things, it works out really well. We have wind-generated electricity for the lights so we also save a lot on that.

As well as being cheaper because he (the husband) constructed it himself, it gives us both a sense of satisfaction and achievement that he has hollowed it out with his own hands, his own creation as it were.
Q. In your opinion are there any ways in which you are less comfortable in your dugout than in a comparable aboveground dwelling?
A. We are less comfortable in one way only and that's not very often. When we moved in here over four years ago, there was only one room and a passage. (This dugout is one of the oldest here, possibly 80 years old). I couldn't wait to move in when I heard we could move out of the tent, even though I had to put up with the fine dust while my husband was digging out the extra rooms, it was worth it. The original room was dug out about 1900 and the style of the rest of the place had to follow it, as we just had to live here and excavate at the same time. All the dugouts built later than this one have sloped their floors outwards, but our's steps down and we will have to dig in some pipes and put in a pump system if several rock faults that have been uncovered in the back rooms haven't been fixed properly. The rainwater came in through these when it rained non-stop a while back. Everybody had to have food dropped in by helicopter. We hope the faults are fixed, it hasn't rained since and we won't know till it does.

Everybody, including my friend in her air-conditioned station homestead, which is a mansion, had mould growing everywhere — even on her tablecloth. It was terrible, but the dugouts which sloped outwards had no problems at all, if they developed a leak, and many of them did — the water just ran straight out their front doors.

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Q. Do you have any other problems?
A. The only problems we have related to heat and cigarette smoke building up when we have quite a few visitors, but mainly smoke, as we do not smoke ourselves. We open the ventilating shafts and it quickly cools down and clears the air.

I don't know if you would call this a problem or not — we have trouble in hearing the telephone. Because we couldn't hear the kids at nights from room to room because of the insulation of the walls, we had to cut in little windows, no glass of course, between the rooms. But then we cannot hear the kids playing or the noise from the opal polishing machines so this is an advantage as well.
Q. How many windows are there that do not open to the outside air but just let in light?
A. None, but we do have a couple of pieces of fibreglass let in to the ceiling at the entrance door.
Q. As you have no windows at all, do you miss them?
A. Never even thought about it.
Q. Have you ever lived in a conventional aboveground house before moving to this town?
A. No.
Q. Which dwelling types have you lived in before you came here?
A. Tent, miner's hut, flat (apartment).
Q. How did you feel about living beneath the ground before you moved in to your dugout?
A. Never even thought about it.
Q. How did you feel when you were told you were going to live in a dugout?
A. Eager, delighted, thrilled to the back teeth, I couldn't wait to move in.
Q. How do you feel now about living beneath the ground?
A. Exactly the same and I wouldn't move if you paid me to.
Q. Do any of your rooms have straight walls?
A. No.
Q. Why not?
A. The rooms lose their charm when they are square. There is a dugout round the corner with normal straight sides and rectangular rooms and it is nothing. It just looks like an ordinary house.
Q. In this town and in this climate, do you prefer to live in a dugout?
A. Absolutely yes, I'm proud of my dugout, proud that I have something unusual and unique. Even though my sister has an automatic washing machine and a tumble dryer, I would not change with her. I love to listen to people's comments about how lovely and comfy all this is.
Q. In this town and in this climate, if you were given the choice, would you prefer an aboveground house, if it had the same accommodation and standard as your dugout?
A. No way.
Q. Would you still prefer to live in an underground dwelling wherever you lived?
A. Yes, most definitely.

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The **Journal of Labor Research** is published semiannually (quarterly, starting in 1982) in the Spring and Fall of each year by the Department of Economics of George Mason University. Subscriptions are on a calendar year basis and subscribers will receive all issues for the current year. Annual subscription rates are: individuals, $15.00; academic libraries, $25.00; institutions, government agencies, and business firms, $35.00; and, students, $10.00. Foreign subscribers add $2.50 to cover additional postage. All remittances should be made payable to **Journal of Labor Research**, Department of Economics, George Mason University, Fairfax, Virginia 22030.

Editorial correspondence and manuscripts should be sent to James T. Bennett, Editor, Journal of Labor Research, Department of Economics, George Mason University, Fairfax, VA 22030. Manuscripts should be submitted in triplicate with a 100 word abstract. A submission fee of $15.00 for subscribers and $30.00 for nonsubscribers must accompany all manuscripts. Papers accepted for publication must conform to JLR style requirements; style sheet available on request.

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THE UNITED STATES AND MICRONESIA

By Ambassador Philip W. Manhard

Micronesia is basically an anthropological term applied to the inhabitants of the Mariana, Caroline, and Marshall Islands in the Western Pacific. It is composed of over 2,000 islands, but the total land area of approximately 700 square miles, less than half that of Rhode Island, is scattered over a 3 million-square-mile ocean the size of the continental United States. Its estimated population of about 120,000 is less than that of the Southwest District of Washington, D.C., or Las Vegas, Nevada. The islands are remote from the rest of the world; the island groups are remote from one another; and the Micronesians are a people divided by separate native hierarchies, distinctive traditional subcultures, and nine different languages. Micronesians have never been politically or economically cohesive nor socially integrated. The islands and peoples were grouped together under the term Micronesia primarily for the administrative and economic convenience of the Spanish, the Germans, and the Japanese, who were their colonial occupiers for 400 years.

Under US administration, with headquarters in Saipan, the trust territory was organized into six districts. Originally the territory comprised the Northern Marianas, Palau, Yap, Truk, Ponape and the Marshall Islands (in west to east order); currently, with the addition of Kosrae (formerly part of the Ponape District) and following the administrative separation of the Northern Mariana Islands in preparation for US commonwealth status, there are seven districts.

Micronesian Perceptions

An elderly Micronesian, whose lifetime spans three colonial occupations, once compared the Micronesian reactions toward the foreigners: "The Germans we disliked but respected and we were willing to work for them; the Japanese we feared but respected and we had to work very hard for them; the Americans we like very much, but we don't respect them and have no need to work for them."

John Mangefel, an astute and thoughtful Senator from Yap,

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wryly paraphrased the Lord's Prayer before his district legislature:

> Our fathers who art in Washington, hallowed be thy funds,
> Thy authorization come, thy appropriations be done,
> In Yap as they are in the President's budget office.
> Give us this day our quarterly allotment,
> And forgive us our overruns, as we forgive our deficits.
> And lead us not into dependence, but deliver us from inflation.
> So ours will be the territory, and the power, and the authority forever. (1)

Another Micronesian leader conscientiously devoted to the ideal of unity and independence, refers to the United States and Micronesia as "the elephant and the flea." He worries lest American power and money be used to keep Micronesia dependent and divided. Yet another able and US-educated Micronesian faults the Americans, not as to their intentions but as to their methods and largesse which he and many others see as destructive of old social values and as demoralizing to the younger Micronesians. Many experienced and sophisticated political leaders from Palau and the Marshall Islands have turned away from the concept of unity, have denied any political or economic compatibility with the other districts of the territory, and with increasing vehemence have denounced the concept of the term "Micronesia" as being a myth with no political meaning or historical basis. They insist a single Micronesian entity is an unrealistic dream to which the Americans have clung too long – a dream which will dissolve with the end of the US administration. What has given rise to these Micronesian perceptions of themselves and the United States? Why this inner turmoil and this almost love-hate relationship with the Americans?

Woven into the Micronesian views described above are parallel threads of criticism directed at both fellow Micronesians and Americans. Many Micronesians are prone to lay the primary blame for Micronesian problems on the shoulders of the Americans. All things considered, it is the United States which has had the ultimate power and responsibility in Micronesia, and it is the United States which has established the policies and provided the money for practically everything that has happened in Micronesia for over 30 years.

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At the same time many thoughtful Micronesians recognize that their compatriots have acquiesced in the changes wrought by the US administration. They realize that more and more Micronesians have either passively accepted, or actively demanded, increased American support resulting in less self-reliance, more dependence, and a rendering of their traditional communal societies and extended family system which in the past cushioned their people from social shock and economic risk. Torn between fundamentally differing cultures, losing allegiance to chieftain hierarchies and communal sharing, yet reluctant to rely on either an American-created administrative system or private enterprise, attracted by independence, but fearful of losing US financial support, Micronesians seem to be suffering from an identity crisis. In this traumatic situation, heightened by the rapidly approaching end of trusteeship, few Micronesians seem to know what they really want in the future. There is a growing feeling among Micronesians that the Americans are also less than certain about what would be the best future for Micronesia.

One thoughtful American observer, David Nevin, dismayed by what he found in Micronesia, described it as "this angry, sullen, frightened paradise." (2) His visit to the trust territory convinced him that "expectations in Micronesia have risen so far beyond the possibility of satisfying them as to destroy hope, and hope destroyed is the root of social misery." (3)

Education for What?

The disincentives to economic development induced by excessive welfare programs and the surfeit of government employees are having a dismaying effect on Micronesian youth. Trained in an American-Style education system oriented to the liberal arts and preparation for white-collar jobs, they are finding precious little opportunity for employment. Lacking practical vocational skills, most young Micronesians cannot qualify for technical trades which are often filled by workers brought in from Korea, Taiwan, the Philippines, or elsewhere. A decade or more ago when the United States began its crash program of universal free education, the trust territory administration was also being rapidly expanded and opened to Micronesians, providing considerable opportunities for young people then graduating from Micronesian high schools and American colleges.

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Now those opportunities have almost vanished and the existent positions are mostly filled by earlier graduates who are still young. Further, the expansion of government services and budgets is beginning to level off, adding to the disappointment and frustration of the more recent school graduates.

It seems undeniable that serious shortcomings plague the Micronesian educational system and that these shortcomings affect Micronesian attitudes toward the United States, if only because the schools are American creations in the American image. Nevin considers the educational system the most fundamental source of the "unreality" in Micronesia today, posing the greatest danger of future social frustration and unrest.(4) Butterfield sums up his view this way:

> Perhaps the most telling case of do-goodism gone awry has been the trust territory's education program . . . . Faithfully modeled on the US school system . . . the education program has stressed the liberal arts, producing graduates who make good US citizens and government civil servants but little else. (5)

In a land where at least 50 percent of the population is estimated to be under 16 years of age, where the population growth rate is 3.5 percent and rising, and where among the unemployed youth, alcoholism and suicide are increasing, educational reform and economic opportunity are urgently needed. Serious though this situation is, it should be noted that, in contrast to many students from a number of developing countries, most if not all Micronesian students who have gone to school in the United States up until now, at least, have returned home after completing their studies. This is a significant indication of an enduring loyalty to their communities and of a strong hope that they can find useful roles to play at home.

The Rise of Separatism

Probably the most intractable issue which has complicated the relations between Micronesia and the United States in recent years has been the widening divisions among Micronesians themselves. No single leader has appeared in Micronesia with sufficient charisma or broad support to claim the allegiance of all parts of the territory. Interdistrict and even interisland rivalries and mutual distrust have persisted despite the broadening of a common educational system, despite the spread of English as

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a *lingua franca*, despite the creation of a territory-wide legislature, and despite greatly increased contact and communication among the island groups of the territory.

Pragmatic Rivalry

The struggle for power between the leaders of Truk and Ponape, supported by the less ambitious leaders of Yap and Kosrae on one side, and the leadership of Palau and the Marshalls on the other, has been waged for years in the Congress of Micronesia. The operative idea has been that the side which gained control of the Congress would dominate the government of Micronesia either in free association with the United States or as an independent state. The Palauan and Marshallese leaders, apparently convinced that they have lost that contest, clearly prefer to avoid future domination by the central districts by attempting to make separate arrangements directly with the United States. This struggle is not simply a contest involving political pride and prestige — Micronesian leaders also have a great concern for financial considerations.

The Congress of Micronesia, dominated by the more populous but relatively poor and unproductive districts of Truk and Ponape, collects the largest share of domestic taxes from the Marshalls and Palau and dispenses it mainly for support of the Congress itself and the central districts. The annual US appropriations for financial support of the trust territory are negotiated among the Micronesian Congress and the trust territory administration and the US legislature.

This mutually uncompromising internal political impasse has obviously been reinforced by the financial stakes. The basic mismatch between the central districts' preponderance of power in the Congress of Micronesia and the greater capacity and initiative for economic progress in Palau and the Marshalls, has driven this three-way division close to the point of no return. Perhaps the greatest irony in Micronesian political life today is that the Congress itself has been the focal point of the breakdown of Micronesian unity — a legislature which the United States, with the best intentions but not with the wisest foresight, created completely in the American image to promote unity and democracy. Recently discussing the growing problem of separatism, a thoughtful and experienced Ponapean leader ruefully commented:

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> When the Congress of Micronesia was established more than a decade ago, I thought it was a good idea and would really help to foster unity and democracy in Micronesia. But now looking back on our experience with the benefit of hindsight, I think both we Micronesians and the Americans made a mistake. We should have started from the bottom up instead of from the top down. If we had laid stronger foundations at the district level first, the prospects for long-term unity might have been better served.

While the Micronesians have certainly had their share of trials and tribulations in dealing with each other and the United States, so has the United States in its relations with Micronesia. It is equally important to examine the other side of the same coin.

Economic Development and Social Welfare

The twin problems of economic development and social welfare in Micronesia have vexed the United States as much as any political or military issue. For many years responsible US officials have sought to overcome economic stagnation in the territory, to stimulate Micronesian productivity, and to increase local revenues, in the hope of easing the financial burden on the United States taxpayer and making Micronesia less economically dependent on the United States, as the end of trusteeship approaches. At the same time, the United States has been sensitive to its obligations under the Trusteeship Agreement to promote the economic advancement and the social and educational growth of the inhabitants of the territory.

In its attempts to achieve both purposes – economic development sufficient to at least lessen the financial burden on the United States and social welfare adequate to honor the US obligation to Micronesia – the United States has been caught in a vicious circle. As the United States failed to find ways to stimulate the Micronesian economy, it devoted more and more resources to social welfare and educational programs, which as they spread have created disincentives to economic development and progress toward self-sufficiency. This has been the effect of the massive Federal programs initiated by the Kennedy administration and expanded by succeeding administrations.

Even in inflationary times, the figures for US financial support for Micronesia are remarkable when one considers that,

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until recently, its total population has been less than 100,000. According to the best, but not necessarily complete, information available, from 1947 to 1979 the United States had expended over one-and-a-quarter billion dollars in the trust territory. While the total expenditure in the first 15 years of that period amounted to slightly less than $62 million, the remaining $1.197 billion has been appropriated in the last 18 years.

From 1963 when they began in earnest, social welfare and education programs have been repeatedly expanded by congressional action to the point where by 1977 the trust territory had become eligible for no less than 482 Federal programs. According to an Interior Department report to the Congress, the territory was participating in 166 such programs. (6) The administration of these programs now involves 14 departments and agencies. In Fiscal Year 1978, these agencies (excepting Interior) provided assistance totaling $31 million. Additionally, the main Interior Department budget was $101.6 million. In FY 1979, appropriations for the Interior Department and other Federal agencies for the trust territory are estimated to total over $138 million.

While the Micronesian economy has continued to stagnate, the massive infusions of US funds into Micronesia for federal assistance programs have apparently created on the part of the responsible agencies a bureaucratic vested interest in the programs' continuation. These programs, originally conceived to support US political objectives as well as territorial economic needs, have now taken on a virtual life of their own, seemingly independent of broader US goals and actual Micronesian requirements.

Stories abound in Micronesia concerning the stream and American visitors from the west coast regional offices of the Departments of Health, Education, and Welfare, Housing and Urban Development, Agriculture, Labor, and still other agencies, who zealously promote their respective programs directly with Micronesian officials and local communities, with or without prior consultation with responsible trust territory officials. (7) With such temptations constantly laid before them by US bureaucrats consciously desirous of raising the standard of living of a relatively poor society, and at least subconsciously interested in enhancing their own positions, it is small wonder that most Micronesians prefer to accept free and usually gra-

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tuitous welfare, thus avoiding the work and sacrifice required for real economic progress.

Conclusion

When social welfare programs become so pervasive that they vitiate motivation for economic development, the result hurts both donor and recipient. In the case of Micronesia, the financial burden on the United States becomes onerous and the wastefulness evident in many programs becomes harder to justify, as a "taxpayer's revolt" spreads in the United States; for the Micronesians, unrealistic expectations rise and confidence in their economic capability and future erodes. Systemic dole is demeaning to any people. By removing the need to work and to be useful in any society, the will is sapped and self-respect undermined. When widespread dole is combined with an educational system ill-suited to the needs of a society, and based on a culture foreign to that society, the result is demeaning as well as demoralizing. It is neither fair to the American taxpayer nor genuinely helpful to the Micronesians for the United States to allow social welfare programs to replace or usurp economic development much longer. The time has come for the United States to heed an old Micronesian motto: "Give a man a fish and he will ask for more, teach a man how to fish and he will feed himself."

FOOTNOTES

(1) Fox Butterfield, "The Improbable Welfare State," *New York Times Magazine*, 27 November 1977, p. 56.

(2) David Nevin, *The American Touch in Micronesia* (New York: W. W. Norton & Company, Inc., 1977), p. 28.

(3) Ibid.

(4) Nevin, *The American Touch in Micronesia*, p. 26.

(5) Butterfield, "The Improbable Welfare State," p. 64.

(6) US, Department of the Interior, Office of Territorial Affairs, *Federal Programs Available to the Territories of the United States*, 1 January 1978.

(7) Often these officials seem unaware of, and unconcerned with, overall US policies in Micronesia or the nature of the status negotiations.

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BOOK REVIEWS

Edited by G. CARL WIEGAND
The Menace of Inflation: A Symposium
The Devin-Adair Company, Old Greenwich, Conn., 1977, $8.95

This paperback comprises a collection of sixteen essays delivered at a conference of the Committee for Monetary Research and Education at the Center for Strategic and International Studies of Georgetown University. The contributors range from politicians such as William Proxmire and Philip M. Crane, to known analysts such as Patrick Boarman and John Chamberlain as well as to academic economists such as Yale Brozen, Lowell Harriss, David Meiselman, Hans Sennholz and G. C. Wiegand, who edited the papers for publication.

John Chamberlain sets the tone with the following comment:

"On balance, the American people have liked the inflation of the past thirty years. They have been short-sighted in this, but they are not going to like continuing inflation. Until the recent surfacing of what Murray Rothbard calls the "exhaustion of the reserve fund," the vocal majority of trades unionists, complaisant employers and all the many beneficiaries of the Employment Act of 1946, have enjoyed consuming the inherited capital of several hard-working centuries."

"It has all been too easy. I have listened to the controversies between the cost-push school, which pins the blame for inflation on the labor unions, and the demand-pull school which says the government is to blame for increasing the money-supply – more money tokens chasing an existing amount of goods and services. I think the argument between the two schools misses the point that history is a seamless web. Cost-push and demand-pull go together, like pork-and-beans or horse-and-buggy."

"The economic consequences of price inflation have generally been bland. Who cares what prices are when wages keep pace with them? And who can really tell whether we have had cost-push or demand-pull? We've obviously had a blend of the two."

"But things happen in time, and they happen in an international world. Short-term planning may not be consistent with long-term needs, such as the need to replenish an exhausted reserve fund of savings. And happenings outside of one's national boundaries may make it difficult to live up to the

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political guarantees of full employment without spinning out printing-press money at a ruinous clip.

"When all the advanced economies are inflating together, and borrowing and spending for the same sort of welfarist measures together, and refraining from raiding each other's currency backing by more or less tacit agreement, the Keynesian world can stumble along by eating up capital reserves. It takes a lot of Keynesian ruin to consume what has been brought into being by our thrifty West European and North American ancestors. But not a single one of the advanced western countries reckoned with the fact that the Arabs and other crude energy-supply nations are not politically controlled by kind-hearted followers of Britain's Lord Beveridge, or by America's full employment legislation. The terrifying cost-push elements interjected into the western economies by the Arab-Iranian-Venezuelan oil cartel cannot, in the nature of things, be offset by a demand-pull issue of western paper money. In the first place, the Arabs and Iranians and the rest would not care to take the paper tokens on any permanent basis for their oil. In the second place, even if they were willing to take paper forever, it would not come back in the form of demand-pull in a way calculated to keep western labor fully employed. We are getting huge price rises now in countries that no longer have the political power to put monetary tokens in the hands of people who will spend or invest to keep the local western economies running."

Unfortunately, the papers were written before the recent U.S. presidential elections and the passage of the various Reagan Administration budgetary measures, which are consequentially not discussed. Instead, the final paper debates the practicality of a return to some form of gold standard – a matter which is still strongly supported in some circles, but does not appear to be an imminent possibility at the present time.

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Published by the University of Toronto Press
Room 039, Arts Building
University of Guelph, Guelph, Ontario, Canada N1G 2W1

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